

College of Science

College of Science

The College of Science encompasses the physical sciences, life sciences, computational sciences, mathematics and data science offering 41 disciplinary degree programs and seven interdisciplinary science programs. The leadership of our renowned scholars and researchers drives an ever-expanding culture of discovery and innovation which embraces all perspectives as we endeavor to solve the grand challenges that face our world.

By extension, College of Science students are innovation leaders whose disciplinary technical expertise and exemplary problem-solving skills are in high demand. Industry, professional schools and graduate programs equally value our students for their professional skills and ability to collaboratively drive discovery in a highly diverse global environment. Each undergraduate program blends courses and experiences that create a unique path for each student as they pursue disciplinary interests as well as personal and professional goals through minors, certificates and experiential learning opportunities including research and Study Abroad programs. The Learning Beyond the Classroom certificate, open only to CoS students, blends career and professional; service, citizenship and leadership; and domestic and international diversity experiences to bring real world know how to the classroom experience.

We Science hard. Are you ready?

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Admissions

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Advising

More Information

College of Science

Policy Information

Contact Information

Mailing address:

Purdue University College of Science
150 N. University St
West Lafayette, IN 47907

Directories

- Science Administration
- Office of Undergraduate Education
- Departments
- Science IT

Phone and Fax

Academic Advising Office

- 765-494-1771 (office)
- 765-496-3015 (fax)

Science Administration

- 765-494-1729 (office)
- 765-494-1736 (fax)

Science IT Helpline

- 765-494-4488

College of Science Core Requirements

- Composition and Presentation

- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- College of Science: No Count Course List

College of Science Administration

About the Department of Science Administration

During their Purdue career, students will be able to take advantage of the many benefits the College of Science has to offer. From Nobel Prize-winning faculty to undergraduate research opportunities and study abroad opportunities to facilities found in the international spotlight, the College of Science is recognized and renowned.

Faculty

Contact Information

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Science Administration

- 765-494-1729 (office)
- 765-494-1736 (fax)

Science IT Helpline

- 765-494-4488

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Recruiting	sciencerecruiting@purdue.edu	Betty Cottrell, Admin Asst.	bcottrel@purdue.edu
K-12 Outreach	K12science@purdue.edu		
Special Events & Alumni Relations	scienceevents@purdue.edu		
Science Advancement	japarker@prf.org	Jimmy Parker, Chief Development Officer	
Science IT	sciencehelp@purdue.edu	call 765.494.4488	

Baccalaureate

Interdisciplinary Science, BS (Biology)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary

area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Interdisciplinary Science Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science

- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Major Courses (67-81 credits)

Required Interdisciplinary Core Courses (34-47 credits)

Required Biology Courses (7-8 credits)

Choose one sequence below.

Select courses COULD satisfy Science for University Core.

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 13500 - First Year Biology Laboratory ♦
- BIOL 11000 - Fundamentals Of Biology I ♦
- BIOL 11100 - Fundamentals Of Biology II ♦

Required Chemistry Courses (4-10 credits)

Choose one option below.

Select courses COULD satisfy Science for University Core:

- CHM 12901 - General Chemistry With A Biological Focus
- CHM 13600 - General Chemistry Honors
- CHM 11500 - General Chemistry and
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I and
- CHM 12600 - Introduction To Chemistry II

Required Computing Option (3-4 credits)

Choose one of the following:

- CS 17700 - Programming With Multimedia Objects ♦
- CS 15900 - C Programming ♦
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Selective Courses (3-4 credits)

Choose one option below.

Select courses COULD satisfy Science for University Core:

- EAPS 10000 - Planet Earth
- EAPS 10900 - The Dynamic Earth
- EAPS 11100 - Physical Geology
- EAPS 22100 - Survey Of Atmospheric Science and
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22500 - Science Of The Atmosphere and
- EAPS 23000 - Laboratory In Atmospheric Science

Required Mathematics Courses (6-10 credits)

Choose one option below.

Satisfies Quantitative Reasoning for University Core:

Option I

- MA 16010 - Applied Calculus I
 - MA 16020 - Applied Calculus II
- Option II - Take one Calculus I and one Calculus II.
- MA 16100 - Plane Analytic Geometry And Calculus I or
 - MA 16500 - Analytic Geometry And Calculus I
 - MA 16200 - Plane Analytic Geometry And Calculus II or
 - MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

Choose one option below.

Select courses COULD satisfy Science for University Core:

Option I

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Option II

- PHYS 22000 - General Physics
- PHYS 22100 - General Physics

Option III

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions

Option IV

- PHYS 17200 - Modern Mechanics

- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Courses (3 credits)

Choose one option below.

- STAT 35000 - Introduction To Statistics
- STAT 35500 - Statistics For Data Science
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods

Required Biology Primary Area Courses (15-16 credits)

- BIOL 23100 - Biology III: Cell Structure And Function
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- **BIOL 32800 - Principles Of Physiology**
- BIOL 36700 - Principles Of Development and BIOL 36701 - Principles Of Development Lab
- BIOL 39500 - Special Assignments (Macromolecules)
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE. Please see your advisor for approval options.

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 - Science Writing And Presentation is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (2-38 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- BIOL 11000 - Fundamentals Of Biology I ♦
or
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ and
- BIOL 13500 - First Year Biology Laboratory ♦
- Required Mathematics Course: Calculus I - Credit Hours: 3.00 - 5.00

- Required Chemistry Course - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 0.00 - 1.00

15-18 Credits

Spring 1st Year

- BIOL 11100 - Fundamentals Of Biology II ♦ or
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Required Mathematics Course: Calculus II - Credit Hours: 3.00 - 5.00
- Required Chemistry Course - Credit Hours: 4.00 - 5.00

13-18 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Elective - Credit Hours: 3.00 - 4.00

15-16 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

17 Credits

Fall 3rd Year

- STAT 35000 - Introduction To Statistics or
- STAT 35500 - Statistics For Data Science or
- STAT 50300 - Statistical Methods For Biology or
- STAT 51100 - Statistical Methods

- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 3rd Year

- BIOL 28600 - Introduction To Ecology And Evolution
- COM 21700 - Science Writing And Presentation
- Required EAPS Selective Course - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15-16 Credits

Fall 4th Year

- Biology Selective Course 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Great Issues In Science - Credit Hours: 3.00
- Required Physics Selective Course: I - Credit Hours: 4.00
- Elective - Credit Hours: 2.00

15-16 Credits

Spring 4th Year

- Supporting Area Course - Credit Hours: 3.00
- Required Physics Selective Course: II - Credit Hours: 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

16-18 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Interdisciplinary Science, BS (Chemistry)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Interdisciplinary Science Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Major Courses (68-83 credits)

Required Interdisciplinary Core Courses (34-47 credits)

Required Biology Courses (7-8 Credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
- BIOL 13500 - First Year Biology Laboratory

Required Chemistry Selective Courses (8-10 credits)

Choose one option below; select courses COULD satisfy Science for University Core:

- CHM 11500 - General Chemistry
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I
- CHM 12600 - Introduction To Chemistry II
- CHM 13600 - General Chemistry Honors

- CHM 12901 - General Chemistry With A Biological Focus + Pass Departmental Exam for CHM 11500

Required Computing Option (3-4 Credits)

Choose one of the following:

- CS 15900 - C Programming ♦
- CS 17700 - Programming With Multimedia Objects ♦
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Selective Courses (3-4 credits)

Choose one option below; select courses COULD satisfy Science for core.

- EAPS 10000 - Planet Earth
- EAPS 10900 - The Dynamic Earth
- EAPS 11100 - Physical Geology
- EAPS 22100 - Survey Of Atmospheric Science and
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22500 - Science Of The Atmosphere and
- EAPS 23000 - Laboratory In Atmospheric Science

Required Mathematics Courses (6-10 credits)

Choose one option below; satisfies Quantitative Reasoning for core.

Option I - Take both courses.

- MA 16010 - Applied Calculus I
- MA 16020 - Applied Calculus II

Option II - Choose one Calculus I & one Calculus II.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

Choose one option below; select courses COULD satisfy Science for core.

Option I

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Option II

- PHYS 22000 - General Physics
- PHYS 22100 - General Physics

Option III

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions

Option IV

- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Course (3 credits)

Choose one of the following:

- STAT 30100 - Elementary Statistical Methods ♦
- STAT 35000 - Introduction To Statistics ♦
- STAT 35500 - Statistics For Data Science ♦
- STAT 50300 - Statistical Methods For Biology ♦
- STAT 51100 - Statistical Methods ♦

Required Chemistry Primary Area Courses (16-18 credits)

- CHM 24100 - Introductory Inorganic Chemistry
- CHM 37200 - Physical Chemistry

Organic Chemistry Lecture I (3-4 credits)

Choose one course in Organic Chemistry I.

- CHM 25500 - Organic Chemistry
- CHM 26100 - Organic Chemistry
- CHM 26505 - Organic Chemistry
- MCMP 20400 - Organic Chemistry I

Organic Chemistry Laboratory I (0-2 Credits)

Choose one Organic Chemistry Laboratory I course (students taking MCMP 20400 do not need an additional laboratory I course).

- CHM 25501 - Organic Chemistry Laboratory
- CHM 26300 - Organic Chemistry Laboratory
- CHM 26600 - Organic Chemistry Laboratory
- CHM 26700 - Organic Chemistry Laboratory Honors

Organic Chemistry Lecture II (3-4 credits)

Choose one course in Organic Chemistry II.

- CHM 25600 - Organic Chemistry
- CHM 26200 - Organic Chemistry
- CHM 26605 - Organic Chemistry
- MCMP 20500 - Organic Chemistry II

Organic Chemistry Laboratory II (0-2 Credits)

Choose one Organic Chemistry Laboratory II course (students taking MCMP 20500 do not need an additional laboratory I course).

- CHM 25601 - Organic Chemistry Laboratory
- CHM 26400 - Organic Chemistry Laboratory
- CHM 26600 - Organic Chemistry Laboratory
- CHM 26800 - Organic Chemistry Laboratory Honors

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE. Please see your advisor for approval options.

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ Labeled as a Science Core Selection in the four year plan of study

*Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 - Science Writing And Presentation is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I

- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one course from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (0-37 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- Calculus Option I - Credit Hours: 3.00 - 5.00
- General Chemistry Selective I - Credit Hours: 4.00 - 5.00
- Biology Selective I - Credit Hours: 4.00
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 0.00 - 1.00

15-18 Credits

Spring 1st Year

- General Chemistry Selective II - Credit Hours: 4.00 - 5.00
- Biology Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective II - Credit Hours: 0.00 - 2.00
- Calculus II Option - Credit Hours: 3.00 - 5.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-18 Credits

Fall 2nd Year

- Organic Chemistry I with Lab - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Physics Selective I - Credit Hours: 4.00

- Elective - Credit Hours: 1.00

15-17 Credits

Spring 2nd Year

- Organic Chemistry II with Lab - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Physics Selective II - Credit Hours: 4.00
- Elective - Credit Hours: 1.00

15-17 Credits

Fall 3rd Year

- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦ or
- STAT 50300 - Statistical Methods For Biology ♦ or
- STAT 51100 - Statistical Methods ♦
- Supporting Area Course - Credit Hours: 3.00
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-16 Credits

Spring 3rd Year

- CHM 24100 - Introductory Inorganic Chemistry
- COM 21700 - Science Writing And Presentation
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- EAPS Selective Course - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00

16-18 Credits

Fall 4th Year

- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Great Issues Option - Credit Hours: 3.00

- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- CHM 37200 - Physical Chemistry
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Interdisciplinary Science, BS (Computer Science)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Interdisciplinary Science Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (72-81 credits)

Required Interdisciplinary Core Courses (38-47 credits)

Required Biology Courses (7-8 credits)

Choose one sequence below; select courses COULD satisfy Science for University Core.

- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
- BIOL 13500 - First Year Biology Laboratory

Required Chemistry Selective Courses (5-10 credits)

Choose one option below; select courses COULD satisfy Science for core.

- CHM 11500 - General Chemistry
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I
- CHM 12600 - Introduction To Chemistry II
- CHM 13600 - General Chemistry Honors
- CHM 12901 - General Chemistry With A Biological Focus

Required Computer Science Selective Courses (4 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Selective Courses (3-4 credits)

Choose one option below; select courses COULD satisfy Science for core.

- EAPS 10000 - Planet Earth
- EAPS 10900 - The Dynamic Earth
- EAPS 11100 - Physical Geology
- EAPS 22100 - Survey Of Atmospheric Science and
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22500 - Science Of The Atmosphere and
- EAPS 23000 - Laboratory In Atmospheric Science

Required Mathematics Courses (8-10 credits)

Satisfies Quantitative Reasoning for core.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

Choose one option; select courses COULD satisfy Science for core.

Option I

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Option II

- PHYS 22000 - General Physics
- PHYS 22100 - General Physics

Option III

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions

Option IV

- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Selective Courses (3 credits)

Choose one course below.

- STAT 35000 - Introduction To Statistics ♦
- STAT 35500 - Statistics For Data Science ♦
- STAT 51100 - Statistical Methods ♦

Required Computer Science Primary Area Courses (16 credits)

- CS 18200 - Foundations Of Computer Science
- CS 24000 - Programming In C
- CS 25000 - Computer Architecture
- CS 25100 - Data Structures And Algorithms
- CS Elective at or above 30000 level - Credit Hours: 3.00

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four-year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list (satisfies Written Communication and Information Literacy for core).

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Sciences for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (2-33 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- EAPS Selective Course - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00 - 4.00

14-16 Credits

Fall 2nd Year

- CS 18200 - Foundations Of Computer Science
- CS 24000 - Programming In C
- Supporting Area Course - Credit Hours: 3.00
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00

15-16 Credits

Spring 2nd Year

- CS 25000 - Computer Architecture
- CS 25100 - Data Structures And Algorithms
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦ or
- STAT 51100 - Statistical Methods ♦
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-16 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- CS Elective 30000 level - Credit Hours: 3.00
- Physics Selective I - Credit Hours: 4.00
- General Chemistry Selective I - Credit Hours: 4.00 - 5.00

- Elective - Credit Hours: 1.00

15-16 Credits

Spring 3rd Year

- Supporting Area Course - Credit Hours: 3.00
- Physics Selective II - Credit Hours: 4.00
- General Chemistry Selective - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15-16 Credits

Fall 4th Year

- Supporting Area Course - Credit Hours: 3.00
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 0.00 - 3.00
- Biology Selective I - Credit Hours: 4.00
- Great Issues Option: 3.00
- Elective - Credit Hours: 0.00 - 2.00

15-16 Credits

Spring 4th Year

- Science Core Selection - Credit Hours: 3.00
- Supporting Area Course - Credit Hours: 3.00
- Biology Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective II - Credit Hours: 2.00
- Elective - Credit Hours: 4.00

15-16 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.

- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Interdisciplinary Science, BS (Earth, Atmospheric, and Planetary Sciences)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Interdisciplinary Science Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (70-80 credits)

Required Interdisciplinary Core Courses (37-46 credits)

Required Biology Courses (7-8 credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
- BIOL 13500 - First Year Biology Laboratory

Required Chemistry Selective Courses (5-10 credits)

Choose one option below; select courses COULD satisfy Science for core.

- CHM 11500 - General Chemistry
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I
- CHM 12600 - Introduction To Chemistry II
- CHM 13600 - General Chemistry Honors
- CHM 12901 - General Chemistry With A Biological Focus

Required Computing Option (3-4 credits)

Choose one of the following:

- CS 15900 - C Programming ♦
- CS 17700 - Programming With Multimedia Objects ♦
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Course (3 credits)

- EAPS 11100 - Physical Geology

Required Mathematics Courses (8-10 credits)

Satisfies Quantitative Reasoning for core.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

Choose one option below; select courses COULD satisfy Science for core.

Option I

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Option II

- PHYS 22000 - General Physics
- PHYS 22100 - General Physics

Option III

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions

Option IV

- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Courses (3 credits)

Choose one of the following:

- STAT 35000 - Introduction To Statistics ♦
- STAT 35500 - Statistics For Data Science ♦
- STAT 50300 - Statistical Methods For Biology ♦
- STAT 51100 - Statistical Methods ♦

Required Earth, Atmospheric, and Planetary Sciences Primary Area Courses (15 - 16 credits)

- EAPS 22100 - Survey Of Atmospheric Science or
- EAPS 22500 - Science Of The Atmosphere
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 11200 - Earth Through Time - (or any EAPS course 20000 level or higher) - Credit Hours: 3.00
- EAPS 30000 level or higher - Credit Hours: 3.00
- EAPS 30000 level or higher - Credit Hours: 3.00
- EAPS 30000 level or higher - Credit Hours: 3.00

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE. Please see your advisor for approval options.

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four-year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list (satisfies Written Communication and Information Literacy for core).

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Sciences for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (3-35 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)

- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- EAPS 11100 - Physical Geology
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 1st Year

- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22100 - Survey Of Atmospheric Science or
- EAPS 22500 - Science Of The Atmosphere
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Physics Selective I - Credit Hours: 4.00

15-17 Credits

Fall 2nd Year

- Physics Selective II - Credit Hours: 4.00
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Supporting Area Course - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16-17 Credits

Spring 2nd Year

- EAPS 11200 - Earth Through Time - (or 20000 level) - Credit Hours 3.00
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦ or
- STAT 50300 - Statistical Methods For Biology ♦ or
- STAT 51100 - Statistical Methods ♦
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Fall 3rd Year

- EAPS 22100 - Survey Of Atmospheric Science or
- Elective - Credit Hours: 3.00 (if EAPS 22500 taken)
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective I - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-18 Credits

Spring 3rd Year

- COM 21700 - Science Writing And Presentation
- EAPS 30000 level - Credit Hours: 3.00
- General Chemistry Selective II or Elective - Credit Hours: 4.00- 5.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

16-17 Credits

Fall 4th Year

- EAPS 30000 level - Credit Hours: 3.00
- Biology Selective I - Credit Hours: 4.00
- Supporting Area Course - Credit Hours: 3.00
- Great Issues Option - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15 Credits

Spring 4th Year

- EAPS 30000 level - Credit Hours: 3.00
- Biology Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective II or Elective - Credit Hours: 0.00 - 2.00
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-18 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be

proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Interdisciplinary Science, BS (Mathematics)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (68-79 credits)

Required Interdisciplinary Core Courses (37-47 credits)

Required Biology Courses (7-8 Credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
- BIOL 13500 - First Year Biology Laboratory

Required Chemistry Selective Courses (5-10 credits)

Choose one option below; select courses COULD satisfy Science for core.

- CHM 11500 - General Chemistry
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I
- CHM 12600 - Introduction To Chemistry II
- CHM 13600 - General Chemistry Honors
- CHM 12901 - General Chemistry With A Biological Focus

Required Computing Option (3-4 credits)

Choose one of the following:

- CS 17700 - Programming With Multimedia Objects ♦
- CS 15900 - C Programming ♦
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Selective Courses (3 - 4 credits)

Select courses COULD satisfy Science for core.

- EAPS 10000 - Planet Earth
- EAPS 10900 - The Dynamic Earth
- EAPS 11100 - Physical Geology
- EAPS 22100 - Survey Of Atmospheric Science and
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22500 - Science Of The Atmosphere and

- EAPS 23000 - Laboratory In Atmospheric Science

Required Mathematics Courses (8-10 credits)

Choose one option below; satisfies Quantitative Reasoning for core.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

Choose one option below; select courses COULD satisfy Science for core.

Option I

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Option II

- PHYS 22000 - General Physics
- PHYS 22100 - General Physics

Option III

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions

Option IV

- PHYS 17200 - Modern Mechanics
- PHYS 25200 - Electricity And Optics Laboratory
- PHYS 24100 - Electricity And Optics

Required Statistics Selective Courses (3 credits)

Choose one of the following:

- STAT 35000 - Introduction To Statistics ♦
- STAT 35500 - Statistics For Data Science ♦
- STAT 50300 - Statistical Methods For Biology ♦

Required Mathematics Primary Area Courses (17-18 credits)

- MA 35100 - Elementary Linear Algebra
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- MA 26200 - Linear Algebra And Differential Equations or
- MA 36600 - Ordinary Differential Equations
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I or
- MA 45300 - Elements Of Algebra I or
- MA 45000 - Algebra Honors

- MA Elective at or above 30000 level

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE. Please see your advisor for approval options.

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four-year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list (satisfies Written Communication and Information Literacy for core).

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Sciences for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (4-37 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or

- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Physics Selective I - Credit Hours: 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-18 Credits

Spring 1st Year

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Physics Selective II - Credit Hours: 4.00
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15-17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- EAPS Selective - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

16-17 Credits

Spring 2nd Year

- MA 35100 - Elementary Linear Algebra
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦ or
- STAT 50300 - Statistical Methods For Biology ♦
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 36600 - Ordinary Differential Equations or
- MA 26200 - Linear Algebra And Differential Equations
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective I - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15-16 Credits

Spring 3rd Year

- COM 21700 - Science Writing And Presentation
- MA Elective 30000+ - Credit Hours: 3.00
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective II or Elective - Credit Hours: 4.00 - 5.00
- Elective - Credit Hours: 3.00

16-17 Credits

Fall 4th Year

- MA 45300 - Elements Of Algebra I or
- MA 45000 - Algebra Honors or
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- Biology Selective I - Credit Hours: 4.00
- Supporting Area Course - Credit Hours: 3.00
- Great Issue Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

16 Credits

Spring 4th Year

- Biology Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective II or Elective - Credit Hours: 2.00
- Supporting Area Course - Credit Hours: 3.00
- Elective - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

14-16 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Interdisciplinary Science, BS (Physics)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Interdisciplinary Science Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses (68-79 credits)

Required Interdisciplinary Core Courses (37-47 credits)

Required Biology Courses (7-8 credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
- BIOL 13500 - First Year Biology Laboratory

Required Chemistry Selective Courses (5-10 credits)

Choose one option below; select courses COULD satisfy Science for core.

- CHM 11500 - General Chemistry
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I
- CHM 12600 - Introduction To Chemistry II
- CHM 13600 - General Chemistry Honors
- CHM 12901 - General Chemistry With A Biological Focus

Required Computing Option (3-4 credits)

Choose one of the following:

- CS 17700 - Programming With Multimedia Objects ♦
- CS 15900 - C Programming ♦
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Selective Courses (3-4 credits)

Choose one option below; select courses COULD satisfy Science for core.

- EAPS 10000 - Planet Earth
- EAPS 10900 - The Dynamic Earth
- EAPS 11100 - Physical Geology
- EAPS 22100 - Survey Of Atmospheric Science
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22500 - Science Of The Atmosphere
- EAPS 23000 - Laboratory In Atmospheric Science

Required Mathematics Courses (8-10 credits)

Choose one Calculus I and one Calculus II option; satisfies Quantitative Reasoning for core.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Courses (8 credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Courses (3 credits)

Choose one of the following:

- STAT 30100 - Elementary Statistical Methods ♦
- STAT 35000 - Introduction To Statistics ♦
- STAT 35500 - Statistics For Data Science ♦
- STAT 50300 - Statistical Methods For Biology ♦
- STAT 51100 - Statistical Methods ♦

Required Physics Primary Area Courses (13-14 credits)

- MA 26100 - Multivariate Calculus
- PHYS 34200 - Modern Physics or
- PHYS 34400 - Modern Physics
- PHYS Elective at or above 30000 level - Credit Hours: 3.00
- PHYS Elective at or above 30000 level - Credit Hours: 3.00

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE. Please see your advisor for approval options.

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 - Science Writing And Presentation is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Met with required major coursework.

Electives (4-37 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- PHYS 17200 - Modern Mechanics
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-18 Credits

Spring 1st Year

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 0.00 - 1.00

15-17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus
- PHYS 34200 - Modern Physics or
- PHYS 34400 - Modern Physics
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-18 Credits

Spring 2nd Year

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- PHYS 30000+ Selective - Credit Hours: 3.00
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- PHYS 30000+ Credit Hours: 3.00
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective I - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00

16-17 Credits

Spring 3rd Year

- EAPS Selective - Credit Hours: 3.00 - 4.00
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective II or Elective - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16-18 Credits

Fall 4th Year

- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦ or
- STAT 50300 - Statistical Methods For Biology ♦ or
- STAT 51100 - Statistical Methods ♦
- Biology Selective I - Credit Hours: 4.00
- Supporting Area Course - Credit Hours: 3.00
- Great Issues Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- Supporting Area Course - Credit Hours: 3.00
- Biology Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective II or Elective - Credit Hours: 2.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 4.00-6.00

15-18 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.

- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Interdisciplinary Science, BS (Statistics)

About the Program

The interdisciplinary science major is designed to provide College of Science students with a broad base in the sciences. By combining a primary area of science study, an interdisciplinary science core, a supporting area of academic interest and the core curriculum shared by all College of Science programs, students explore how the disciplines of science come together to identify and solve scientific challenges. Students customize the major by selecting a departmental or interdepartmental primary area based in science and a supporting area that complements or enhances the primary area. This supporting area may be an approved minor from any college or school at the University or a concentration of 18 credits of courses with a unifying theme. There is a primary area representing each department in the College of Science, however, cross-disciplinary areas may be explored and added as appropriate. With the help of either a faculty member or an academic advisor, students are encouraged to petition for approval of their supporting area.

The Interdisciplinary Science Major is designed to give a student a broad base in the sciences with more depth in a Primary Area of Science and a Supporting Area, usually outside of Science. The Core courses are common across the major but the student customizes the major by selecting a departmental or interdepartmental Primary Area based in Science and a Supporting Area which may come from any college or school at the University. There is a Primary Area representing each department in the College of Science and cross-disciplinary areas will be explored and added as appropriate. Several Supporting Areas will be suggested and a student may petition for approval of others.

Students completing the interdisciplinary science major have gone on to a variety of careers - some in, and others out of, the world of science. These careers include medicine, law and other advanced-study professions, scientific sales, technical and scientific writing, computer programming and engineering.

Interdisciplinary Science Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (67-78 credits)

Required Interdisciplinary Core Courses (37-47 credits)

Required Biology Courses (7-8 credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- BIOL 11000 - Fundamentals Of Biology I
- BIOL 11100 - Fundamentals Of Biology II
- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
- BIOL 13500 - First Year Biology Laboratory

Required Chemistry Selective Courses (5-10 credits)

Choose one sequence below; select courses COULD satisfy Science for core.

- CHM 11500 - General Chemistry
- CHM 11600 - General Chemistry
- CHM 12500 - Introduction To Chemistry I
- CHM 12600 - Introduction To Chemistry II
- CHM 12901 - General Chemistry With A Biological Focus
- CHM 13600 - General Chemistry Honors

Required Computing Option (3-4 credits)

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Earth, Atmospheric, and Planetary Science Selective Courses (3-4 credits)

Choose one option below; select courses COULD satisfy Science for core.

- EAPS 10000 - Planet Earth
- EAPS 10900 - The Dynamic Earth
- EAPS 11100 - Physical Geology
- EAPS 22100 - Survey Of Atmospheric Science and
- EAPS 23000 - Laboratory In Atmospheric Science
- EAPS 22500 - Science Of The Atmosphere
- EAPS 23000 - Laboratory In Atmospheric Science

Required Mathematics Courses (8-10 credits)

Choose one Calculus I option and one Calculus II option; satisfies Quantitative Reasoning for core.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

Choose one option below.

Select courses COULD satisfy Science for University Core:

Option I

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Option II

- PHYS 22000 - General Physics
- PHYS 22100 - General Physics

Option III

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions

Option IV

- PHYS 17200 Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Selective Courses (3 credits)

Choose one of the following:

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Required Statistics Primary Area Courses (12-13 credits)

- STAT 22500 - Introduction To Probability Models or
 - STAT 31100 - Introductory Probability or
 - STAT 41600 - Probability or
 - STAT 51600 - Basic Probability And Applications
 - STAT 41700 - Statistical Theory or
 - STAT 51300 - Statistical Quality Control or
 - STAT 51400 - Design Of Experiments or
 - MA 26100 - Multivariate Calculus
 - STAT 51200 - Applied Regression Analysis
- AND
- STAT 51300 - Statistical Quality Control or
 - STAT 51400 - Design Of Experiments

NOTE: STAT 51300 and STAT 51400 can only be taken one time each to meet primary area course requirements.

Required Supporting Area Courses (18 credits)

MUST BE APPROVED BY COLLEGE. Please see your advisor for approval options.

Other Departmental/Program Course Requirements (15-37 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (5-38 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00
- Science Core First-Year Composition - Credit Hours: 3.00 - 4.00
- Physics Selective I - Credit Hours: 4.00
- Elective - Credit Hours: 1.00

15-18 Credits

Spring 1st Year

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00
- Physics Selective II - Credit Hours: 4.00

- Elective - Credit Hours: 1.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or
- STAT 41700 - Statistical Theory or
- STAT 51300 - Statistical Quality Control or
- STAT 51400 - Design Of Experiments

Note: MA 26100 can be taken this semester. If another choice is selected, it will need to be moved down in the plan of study to accommodate pre-requisites.

- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- EAPS Selective - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Spring 2nd Year

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15-16 Credits

Fall 3rd Year

- STAT 22500 - Introduction To Probability Models or
- STAT 31100 - Introductory Probability or
- STAT 41600 - Probability or
- STAT 51600 - Basic Probability And Applications
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective I - Credit Hours: 4.00 - 5.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15-16 Credits

Spring 3rd Year

- COM 21700 - Science Writing And Presentation
- Supporting Area Course - Credit Hours: 3.00
- General Chemistry Selective II or Elective - Credit Hours: 4.00 - 5.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16-17 Credits

Fall 4th Year

- STAT 51200 - Applied Regression Analysis
- Supporting Area Course - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Biology Selective I - Credit Hours: 4.00
- Great Issues Option - Credit Hours: 3.00

16 Credits

Spring 4th Year

- STAT 51300 - Statistical Quality Control or
- STAT 51400 - Design Of Experiments
- Supporting Area Course - Credit Hours: 3.00
- Biology Selective II - Credit Hours: 3.00 - 4.00
- Biology Selective II or Elective - Credit Hours: 0.00 - 2.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours - 0.00 - 3.00

15 Credits

Notes

- 2.0 Graduation GPA required for Bachelor of Science

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).

- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Science Education - Biology Concentration, BS

About the Program

A College of Science degree in Science Education prepares future science teachers for certification at the middle and high school level. Students customize their focus by selecting a major area of study in biology, chemistry, physics, or earth and space science within an interdisciplinary science framework. The Science Education degree ensures students are thoroughly educated in their content discipline and modern theories of learning and education. Graduates are in high demand as STEM education and careers continue to grow in demand.

Degree Requirements

124 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click [here](#).

Departmental/Program Major Courses

Overall GPA for Biology Concentration courses with the Departmental/Program Major Courses must be 2.50 or greater. This includes all courses under the Science Education Core plus all courses in the Biology Concentration.

Required Science Education Core Courses (25-30 credits)

Overall GPA for Biology Concentration courses with the Departmental/Program Major Courses must be ≥ 2.50 . This includes all courses under the Science Education Core plus all courses in the Biology Concentration.

Required Chemistry Course (5 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦

Required Computing Option (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦

Required Calculus Courses (6-10 credits)

Choose one Calculus sequence. (satisfies Quantitative Reasoning for core)

- MA 16010 - Applied Calculus I
- MA 16020 - Applied Calculus II
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Courses (8 credits)

Choose one Physics sequence. (satisfies Science for core)

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS - 17200 Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Course (3 credits)

- STAT 50300 - Statistical Methods For Biology

Biology Concentration (37 credits)

Overall GPA for Biology Concentration courses with the Departmental/Program Major Courses must be ≥ 2.50 . This includes all courses under the Science Education Core plus all courses in the Biology Concentration.

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior & (satisfies Science, Technology & Society and Science for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function ♦
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology ♦
- BIOL 28600 - Introduction To Ecology And Evolution
- BIOL 13500 - First Year Biology Laboratory or
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 19500 - Special Assignments
-Diet, Dis & Immune Sys-Honors
-Yr I Bio Lab Disea Ecol-Honors
-Yr I Bio Lab Phges Flds-Honors

Organic Chemistry (8 credits)

Organic Chemistry I - Choose one group.

- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 26505 - Organic Chemistry ♦
- CHM 26300 - Organic Chemistry Laboratory

Organic Chemistry II - Choose one group.

- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory
- CHM 26605 - Organic Chemistry ♦
- CHM 26400 - Organic Chemistry Laboratory

Biology Selectives (10 credits)

Elect ten (10) hours of upper division biology courses

- One Intermediate Biology Selective
- At least one Group A Selective
- At least one Group B Selective
- Satisfy the Base Laboratory requirement
- At least one 5000-level course from Group A Selectives or Group B Selectives.
- Overlap (Intermediate Selective, A, B, 500, Lab) is allowed, but 10 credits must still be earned.
- Research (49400 or 49900 - maximum of 2 credits), BIOL 36701 Principles of Development Lab, and BIOL 44100 Senior Seminar in Genetics, will count toward the 10 credit requirement, but will not satisfy the Group A, Group B, or laboratory requirement.

Group A Selective

- BIOL 39500 - Special Assignments
Title Options: Macromolecules; Genes+Proteins=BigData
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- BIOL 44400 - Human Genetics
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 48100 - Eukaryotic Genetics
- BIOL 51100 - Introduction To X-Ray Crystallography
- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 51700 - Molecular Biology: Proteins
- BIOL 52900 - Bacterial Physiology
- BIOL 53300 - Medical Microbiology
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 56200 - Neural Systems
- BIOL 56310 - Protein Bioinformatics
- BIOL 59500 - Special Assignments
Title Options: Cellular Biology Of Plants; Epigenetics in Human Disease; Genetics & Omics of Host-Microbe Interaction; Methods and Measurements in Physical Biochemistry; Neural Mechanisms in Health & Disease; Neurobiology of Learning and Memory; Practical Biocomputing; Theory of Molecular Methods
- BCHM 43400 - Medical Topics In Biochemistry
- BCHM 56100 - General Biochemistry I
- BCHM 56200 - General Biochemistry II
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 53300 - Introductory Biochemistry

Group B Selective

- BIOL 32800 - Principles Of Physiology
- BIOL 36700 - Principles Of Development
- BIOL 43200 - Reproductive Physiology
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 53700 - Immunobiology
- BIOL 55900 - Endocrinology
- BIOL 58000 - Evolution
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59100 - Field Ecology

- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments
Title Options: Disease Ecology; Ecology
- HORT 30100 - Plant Physiology

Intermediate Biology Requirements

Choose one option.

- BIOL 32800 - Principles Of Physiology
- BIOL 36700 - Principles Of Development
- BIOL 39500 - Special Assignments -*Macromolecules*
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology

Lab Requirement

Each student will select an option from the Required Course list. Students must also satisfy Objectives A and B below, which can be met by courses, research, or a combination of the two.

- BIOL research (49400 or 49900) can be used to satisfy Objectives A and/or B below. The Research Mentor must approve research to meet one or both objectives. Consult with your academic advisor for the forms used to obtain Research Mentor approval for each objective.
- A minimum of four credits of BIOL 49400 or 49900 must be earned in addition to research director approval.
- Students who complete a Biology Honors Thesis automatically meet Objectives A and B.

Required Course

All students must take one of the following courses:

- BIOL 43900 - Laboratory In General Microbiology
- BIOL 44202 - Animal Physiology
- BIOL 44205 - Introduction To LabVIEW
- BIOL 44207 - Exploration Of Protein Structure
- BIOL 44211 - Laboratory In Anatomy And Physiology
- BIOL 44212 - Microscopy And Cell Biology
- BIOL 59100 - Field Ecology
- BIOL 59500 - Special Assignments
Title Options: CryoEM 3D Reconstruction; Laboratory in Ecology

Objective A - Research planning, literature review, writing

All students must meet Objective A with research, or take one of the following courses.

- BIOL 39500 - Special Assignments
-Exp Dsgn&Quant Analys I - Honors

- BIOL 43900 - Laboratory In General Microbiology
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49500 - Special Assignments -*Data Science: Good versus Bad Data*
- BIOL 58210 - Ecological Statistics
- BIOL 59100 - Field Ecology
- BIOL 59500 - Special Assignments
Title Options: Exp Dsgn&Quant Analys I - Honors; Laboratory in Ecology; Neural Mech in Hlth Disease; Theory of Molecular Methods

Objective B - Analysis, simulation, and presentation

All students must meet Objective B with research, or take one of the following courses.

- BIOL 39500 - Special Assignments
Title Option: Exp Dsgn&Quant Analys I - Honors
- BIOL 43900 - Laboratory In General Microbiology
- BIOL 44202 - Animal Physiology
- BIOL 44205 - Introduction To LabVIEW
- BIOL 44212 - Microscopy And Cell Biology
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49500 - Special Assignments
Title Option: Data Science: Good versus Bad Data
- BIOL 54200 - Modular Upper-Division Laboratory Course
Title: Neurophysiology
- BIOL 58210 - Ecological Statistics
- BIOL 59100 - Field Ecology
- BIOL 59500 - Special Assignments
Title Options: CryoEM 3D Reconstruction; Data Analysis in Neurosci; Exp Dsgn&Quant Analys I - Honors; Laboratory in Ecology; Neural Mech in Hlth Disease; Theory of Molecular Methods

Educational Program Course Requirements (43-44 credits)

All Professional Education courses taken must be at a C- or better with a GPA greater than or equal to 3.0.

- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 20500 - Exploring Teaching As A Career (2 credits; satisfies Written Communication for core)
- EDCI 27000 - Introduction To Educational Technology And Computing (1 credit required; satisfies Information Literacy for core)
- EDCI 28500 - Multiculturalism And Education (2 credits required; satisfies Behavioral & Social Sciences for core)
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems (1 credit required)
- EDCI 35000 - Community Issues & Applications For Educators (1 credit required)
- EDCI 37001 - Teaching And Learning English As A New Language (2 credits required)
- EDCI 42100 - The Teaching Of Biology In Secondary Schools
- EDCI 49800 - Supervised Teaching (12 credits required)
- EDPS 23500 - Learning And Motivation (2 credits required)
- EDPS 24000 - Children With Gifts, Creativity, And Talents

- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 26501 - The Inclusive Classroom
- EDPS 32700 - Classroom Assessment (1 credit required)
- EDPS 36201 - Positive Behavioral Supports (2 credits required)
- EDPS 43010 - Secondary Creating And Managing Learning Environments (2 credits required)
- EDST 20010 - Educational Policies And Laws (1 credit required)
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary

Learner Pathway Selective

Choose one.

- EDCI 51900 - Teaching English Language Learners
- EDCI 52600 - Language Study For Educators
- EDCI 55900 - Academic Language And Content Area Learning
- EDPS 21100 - Special Education Law, Policy, And Ethical Guidelines
- EDPS 54200 - Curriculum And Program Development In Gifted Education
- EDPS 54500 - Social And Affective Development Of Gifted Students

Other Departmental /Program Course Requirements (3-21 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition

Met with EDCI 20500. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I - Met with EDCI 28500
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - met with EDPS 23500
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with EDCI 42100 in major.

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with EDCI 49800 in major.

Optional Concentration

K-12 Integrated STEM Optional Concentration for Education

Electives (0-16 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- EDCI 20500 - Exploring Teaching As A Career
- EDST 20010 - Educational Policies And Laws
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments (*2 credits required*)
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Elective - Credit Hours: 1.00 (*BIOL 11500 recommended*)

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- EDCI 28500 - Multiculturalism And Education
- EDCI 35000 - Community Issues & Applications For Educators
- CHM 25500 - Organic Chemistry ♦ and
- CHM 25501 - Organic Chemistry Laboratory
OR
- CHM 26505 - Organic Chemistry ♦ and
- CHM 26300 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection Language & Culture - Credit Hours: 3.00

16-18 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function ♦
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 37001 - Teaching And Learning English As A New Language
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 36201 - Positive Behavioral Supports
- CHM 25600 - Organic Chemistry ♦ and
- CHM 25601 - Organic Chemistry Laboratory
OR
- CHM 26505 - Organic Chemistry ♦ and
- CHM 26400 - Organic Chemistry Laboratory
- Science Core Selection General Education - Credit Hours: 3.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology ♦
- BIOL 28600 - Introduction To Ecology And Evolution
- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDPS 23500 - Learning And Motivation
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 26501 - The Inclusive Classroom
- Science Core Selection Language & Culture - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- EDCI 27000 - Introduction To Educational Technology And Computing
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Intermediate Biology Selective - Credit Hours: 3.00 - 4.00
- Group A Selective - Credit Hours: 2.00 - 3.00
- Science Core Selection General Education - Credit Hours: 3.00
- Learner Specialty Dual Pathway Course - Credit Hours: 3.00

17-18 Credits

Spring 3rd Year

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Group B Selective - Credit Hours: 2.00
- Science Core Selection TW/TP - Credit Hours: 3.00
- Elective (BIOL 39300 recommended) - Credit Hours: 1.00

15-17 Credits

Fall 4th Year

- STAT 50300 - Statistical Methods For Biology
- EDCI 42100 - The Teaching Of Biology In Secondary Schools
- EDPS 32700 - Classroom Assessment
- EDPS 43010 - Secondary Creating And Managing Learning Environments
- Base Lab Requirement - Credit Hours: 2.00 - 4.00
- 50000 Level Biology Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection Great Issues In Science - Credit Hours: 3.00

17-19 Credits

Spring 4th Year

- EDCI 49800 - Supervised Teaching

12 Credits

Notes

Note: This degree is intended to give students many options. Students need to consult with a College of Science Academic Advisor regarding requirements.

2.0 average in BIOL courses required to graduate.

2.5 average in Biology concentration courses required to graduate

3.0 average in Professional Education courses (No grade below a C-)

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Science Education - Chemistry Concentration, BS

About the Program

A College of Science degree in Science Education prepares future science teachers for certification at the middle and high school level. Students customize their focus by selecting a major area of study in biology, chemistry, physics, or earth and space science within an interdisciplinary science framework. The Science Education degree ensures students are thoroughly educated in their content discipline and modern theories of learning and education. Graduates are in high demand as STEM education and careers continue to grow in demand.

Science Education Major Change (CODO) Requirements

Degree Requirements

131 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses

Required Science Education Core Courses (24-30 credits)

Overall GPA for Chemistry Concentration courses with the Departmental/Program Major Courses must be ≥ 2.50 . This includes all courses under the Science Education Core plus all courses in the Chemistry Concentration unless otherwise indicated.

Required Chemistry Selective Courses (4-5 credits)

(satisfies Science for University Core)

- CHM 11500 - General Chemistry or
- CHM 12500 - Introduction To Chemistry I

Required Computing Option (3-4 credits)

Required for College of Science Core. NOT included in the CONTENT GPA.

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Calculus Selective Courses (6-10 credits)

(satisfies Quantitative Reasoning for University Core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
AND
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

(satisfies Science for core)

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
OR
- PHYS 24100 - Electricity And Optics and
- PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Selective Courses (3 credits)

NOT included in the CONTENT GPA.

- STAT 30100 - Elementary Statistical Methods (satisfies Information Literacy for University Core) or
- STAT 35000 - Introduction To Statistics

Chemistry Concentration (38-42 credits)

Overall GPA for Chemistry Concentration courses with the Departmental/Program Major Courses must be ≥ 2.50 (CONTENT GPA). This includes all courses under the Science Education Core plus all courses in the Chemistry Concentration unless otherwise indicated.

- CHM 24100 - Introductory Inorganic Chemistry
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 34200 - Inorganic Chemistry
- CHM 37300 - Physical Chemistry
- CHM 37400 - Physical Chemistry
- CHM 11600 - General Chemistry (satisfies Science for core) or
- CHM 12600 - Introduction To Chemistry II (satisfies Science for core) or
- CHM 12901 - General Chemistry With A Biological Focus (satisfies Science for core) or
- CHM 13600 - General Chemistry Honors (satisfies Science for core)
- CHM 26505 - Organic Chemistry or
- CHM 26100 - Organic Chemistry
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26300 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors
- CHM 26200 - Organic Chemistry or

- CHM 26605 - Organic Chemistry
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26400 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors
- CHM 33300 - Principles Of Biochemistry or
- CHM 53300 - Introductory Biochemistry or
- BCHM 56100 - General Biochemistry I
- CHM 37301 - Physical Chemistry Laboratory and
- CHM 37401 - Physical Chemistry Laboratory
- MA 26100 - Multivariate Calculus (satisfies Quantitative Reasoning for core) or
- MA 27101 - Honors Multivariate Calculus (satisfies Quantitative Reasoning for core)

Educational Program Course Requirements (40-41 credits)

All Profession Education courses taken must be at a C- or better with an average GPA greater than or equal to 3.0.

- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 20500 - Exploring Teaching As A Career (2 credits required; satisfies Written Communication for core)
- EDCI 27000 - Introduction To Educational Technology And Computing (1 credit required; satisfies Information Literacy for University Core)
- EDCI 28500 - Multiculturalism And Education (2 credits required; satisfies Behavioral & Social Sciences for University Core)
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems (1 credit required)
- EDCI 35000 - Community Issues & Applications For Educators (1 credit required)
- EDCI 37001 - Teaching And Learning English As A New Language (2 credits required)
- EDCI 42400 - The Teaching Of Earth And Physical Science In The Secondary Schools
- EDCI 49800 - Supervised Teaching
- EDPS 23500 - Learning And Motivation (2 credits required; satisfies Behavioral & Social Sciences for University Core)
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 26501 - The Inclusive Classroom
- EDPS 32700 - Classroom Assessment (1 credit required)
- EDPS 36201 - Positive Behavioral Supports (2 credits required)
- EDPS 43010 - Secondary Creating And Managing Learning Environments (2 credits required)
- EDST 20010 - Educational Policies And Laws (1 credit required)
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary

Other Departmental /Program Course Requirements (4-25 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition

Met with EDCI 20500 (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I - Met with EDCI 28500
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - met with EDPS 23500
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with EDCI 42400 in major.

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with EDCI 49800 in major.

Required Pre-Requisite Course (1 Credit)

- CHM 19400 - Freshman Chemistry Orientation

Electives (0-25 credits)

Optional Concentration

K-12 Integrated STEM Optional Concentration for Education

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or

- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CHM 19400 - Freshman Chemistry Orientation
- EDCI 20500 - Exploring Teaching As A Career
- EDST 20010 - Educational Policies And Laws
- CHM 11500 - General Chemistry or
- CHM 12500 - Introduction To Chemistry I
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection General Education - Credit Hours: 3.00

15-17 Credits

Spring 1st Year

- EDCI 28500 - Multiculturalism And Education
- EDCI 35000 - Community Issues & Applications For Educators
- PHYS 17200 - Modern Mechanics
- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II or
- CHM 12901 - General Chemistry With A Biological Focus or
- CHM 13600 - General Chemistry Honors
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00

18-20 Credits

Fall 2nd Year

- CHM 29400 - Sophomore Chemistry Seminar
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 37001 - Teaching And Learning English As A New Language

- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 36201 - Positive Behavioral Supports
- CHM 26505 - Organic Chemistry or
- CHM 26100 - Organic Chemistry
- CHM 26300 - Organic Chemistry Laboratory or
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

15-17 Credits

Spring 2nd Year

- CHM 24100 - Introductory Inorganic Chemistry
- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDPS 23500 - Learning And Motivation
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 26501 - The Inclusive Classroom
- CHM 26605 - Organic Chemistry or
- CHM 26200 - Organic Chemistry
- CHM 26400 - Organic Chemistry Laboratory or
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 Electricity And Optics Laboratory

18-19 Credits

Fall 3rd Year

- CHM 37300 - Physical Chemistry
- CHM 37301 - Physical Chemistry Laboratory
- EDCI 27000 - Introduction To Educational Technology And Computing
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics
- Science Core Selection TWTP (COM 21700 strongly recommended) - Credit Hours: 3.00
- Science Core Selection Language & Culture - Credit Hours: 3.00

15 Credits

Spring 3rd Year

- CHM 34200 - Inorganic Chemistry

- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- CS 17700 - Programming With Multimedia Objects or
- CS 18000 - Problem Solving And Object-Oriented Programming
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary
- Science Core Selection General Education - Credit Hours: 3.00

16-17 Credits

Fall 4th Year

- EDCI 42400 - The Teaching Of Earth And Physical Science In The Secondary Schools
- EDPS 32700 - Classroom Assessment
- EDPS 43010 - Secondary Creating And Managing Learning Environments
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors
- CHM 33300 - Principles Of Biochemistry or
- CHM 43300 - Biochemistry or
- BCHM 56100 - General Biochemistry I
- Science Core Selection Great Issues - Credit Hours: 3.00

16 Credits

Spring 4th Year

- EDCI 49800 - Supervised Teaching

12 Credits

Notes

Note: This degree is intended to give students many options. Students need to consult with a College of Science Academic Advisor regarding requirements.

2.0 average in CHM courses required to graduate.

2.5 average or above in Chemistry Content courses required to graduate

3.0 average or above in Professional Education courses required to graduate (No grade below a C-)

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.

- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Science Education - Earth Space Science Concentration, BS

About the Program

A College of Science degree in Science Education prepares future science teachers for certification at the middle and high school level. Students customize their focus by selecting a major area of study in biology, chemistry, physics, or earth and space science within an interdisciplinary science framework. The Science Education degree ensures students are thoroughly educated in their content discipline and modern theories of learning and education. Graduates are in high demand as STEM education and careers continue to grow in demand.

Science Education Major Change (CODO) Requirements

Degree Requirements

126 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience

- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses

Required Science Education Core Courses (27-30 credits)

Overall GPA for Earth Space Concentration courses with the Departmental/Program Major Courses must be ≥ 2.50 . This includes all courses under the Science Education Core plus all courses in the Earth Space Concentration unless otherwise indicated.

Required Chemistry Selective Courses (4-5 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦

Required Computing Option (4 credits)

Meets College of Science Computing Requirement. NOT included in CONTENT GPA.

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Calculus Selective Courses (8-10 credits)

(satisfies Quantitative Reasoning for core). NOT included in CONTENT GPA.

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
AND
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

(satisfies Science for core)

- PHYS 17200 - Modern Mechanics or
- PHYS 22000 - General Physics
AND
- PHYS 22100 - General Physics or

- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

Required Statistics Selective Courses (3 credits)

Meets College of Science Statistics Requirement. NOT included in CONTENT GPA.

- STAT 30100 - Elementary Statistical Methods ♦ (satisfies Information Literacy for core)

Earth Space Science Concentration (32-33 credits)

Overall GPA for Earth Space Concentration courses with the Departmental/Program Major Courses must be ≥ 2.50 . This includes all courses under the Science Education Core plus all courses in the Earth Space Concentration unless otherwise indicated.

- EAPS 10500 - The Planets (satisfies Science for core)
- EAPS 11700 - Introduction To Atmospheric Science (satisfies Science for core)
- EAPS 20000 - Water World: Processes And Challenges In Global Hydrology (satisfies Science, Technology, Society for core)
- EAPS 24300 - Earth Materials I ♦ (satisfies Science for core)
- EAPS 35300 - Earth Surface Processes
- EAPS 35400 - Plate Tectonics
- EAPS 39000 - Geologic Field Methods
- CHM 11600 - General Chemistry ♦ (satisfies Science for core) or
- CHM 12600 - Introduction To Chemistry II ♦ (satisfies Science for core) or
- CHM 12901 - General Chemistry With A Biological Focus ♦ or
- CHM 13600 - General Chemistry Honors ♦ (satisfies Science for core)
- EAPS 10900 - The Dynamic Earth (satisfies Science for core) or
- EAPS 11200 - Earth Through Time (satisfies Science for core)
- EAPS 11800 - Introduction To Earth Sciences ♦ or
- EAPS 11100 - Physical Geology (satisfies Science for University Core)

Educational Program Course Requirements (43-44 credits)

Professional Education GPA Average ≥ 3.00 - no grade lower than C-

- EDCI 20500 - Exploring Teaching As A Career (2 credits required; satisfies Written Communication for core)
- EDCI 27000 - Introduction To Educational Technology And Computing (1 credit required; satisfies Information Literacy for core)
- EDCI 28500 - Multiculturalism And Education (2 credits required; satisfies BSS for core)
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems (1 credit required)
- EDCI 35000 - Community Issues & Applications For Educators (1 credit required)
- EDCI 37001 - Teaching And Learning English As A New Language (2 credits required)
- EDCI 42400 - The Teaching Of Earth And Physical Science In The Secondary Schools
- EDCI 49800 - Supervised Teaching (12 credits required)
- EDPS 23500 - Learning And Motivation (2 credits required; satisfies BSS for core)
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 24800 - Differentiating Curriculum And Instruction

- EDPS 26501 - The Inclusive Classroom
- EDPS 32700 - Classroom Assessment (1 credit required)
- EDPS 36201 - Positive Behavioral Supports (2 credits required)
- EDPS 43010 - Secondary Creating And Managing Learning Environments (2 credits required)
- EDST 20010 - Educational Policies And Laws (1 credit required; satisfies BSS for core)
- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches or
- EDPS 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents or
- EDPS 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary

Learner Pathway Selective (3 credits)

Choose one.

- EDCI 51900 - Teaching English Language Learners
- EDCI 52600 - Language Study For Educators
- EDCI 55900 - Academic Language And Content Area Learning
- EDPS 21100 - Special Education Law, Policy, And Ethical Guidelines
- EDPS 54200 - Curriculum And Program Development In Gifted Education
- EDPS 54500 - Social And Affective Development Of Gifted Students

Other Departmental/Program Course Requirements (9-21 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition

Met with EDCI 20500. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I - Met with EDCI 28500
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - met with EDPS 23500
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with EDCI 42400 in major.

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with EDCI 49800 in major.

Electives (0-15 credits)

Optional Concentration

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- EDCI 20500 - Exploring Teaching As A Career
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- EAPS 11800 - Introduction To Earth Sciences ♦ or
- EAPS 11100 - Physical Geology ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- Science Core Selection - Credit Hours: 3.00-4.00

16-19 Credits

Spring 1st Year

- EDCI 28500 - Multiculturalism And Education
- EDCI 35000 - Community Issues & Applications For Educators
- EDST 20010 - Educational Policies And Laws
- CHM 11600 - General Chemistry ♦ or
- CHM 12600 - Introduction To Chemistry II ♦ or
- CHM 12901 - General Chemistry With A Biological Focus ♦ or
- CHM 13600 - General Chemistry Honors ♦
- EAPS 11200 - Earth Through Time or
- EAPS 10900 - The Dynamic Earth
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

15-17 Credits

Fall 2nd Year

- EAPS 24300 - Earth Materials I ♦
- EDCI 37001 - Teaching And Learning English As A New Language
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 36201 - Positive Behavioral Supports
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents or
- EDPS 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- PHYS 17200 - Modern Mechanics or
- PHYS 22000 - General Physics
- Science Core Selection - Credit Hours: 3.00

17 Credits

Spring 2nd Year

- EAPS 20000 - Water World: Processes And Challenges In Global Hydrology
- EAPS 35400 - Plate Tectonics
- EDPS 23500 - Learning And Motivation
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 26501 - The Inclusive Classroom
- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches or

- EDPS 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 22100 - General Physics or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

16 Credits

Fall 3rd Year

- EAPS 10500 - The Planets
- EAPS 11700 - Introduction To Atmospheric Science
- EAPS 35300 - Earth Surface Processes
- EDCI 27000 - Introduction To Educational Technology And Computing
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems
- Science Core Selection - Credit Hours: 3.00
- Elective (if needed) - Credit Hours: 3.00

14-17 Credits

Spring 3rd Year

- COM 21700 - Science Writing And Presentation
- EAPS 39000 - Geologic Field Methods
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary
- Learner Pathway Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective (if needed) - Credit Hours: 3.00

14-18 Credits

Fall 4th Year

- EDCI 42400 - The Teaching Of Earth And Physical Science In The Secondary Schools
- EDPS 32700 - Classroom Assessment
- EDPS 43010 - Secondary Creating And Managing Learning Environments
- STAT 30100 - Elementary Statistical Methods
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Great Issues Option - Credit Hours: 3.00

16 Credits

Spring 4th Year

- EDCI 49800 - Supervised Teaching

12 Credits

Notes

Note: This degree is intended to give students many options. Students need to consult with a College of Science Academic Advisor regarding requirements.

2.0 Graduation GPA required for Bachelor of Science degree.

2.0 average in EAPS major classes required to graduate.

Overall GPA for Earth Space Science Concentration courses with the Departmental/Program Major Courses must be ≥ 2.5

Professional Education GPA Average ≥ 3.00 - no grade lower than C-

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Science Education - Physics Concentration, BS

About the Program

A College of Science degree in Science Education prepares future science teachers for certification at the middle and high school level. Students customize their focus by selecting a major area of study in biology, chemistry, physics, or earth and space science within an interdisciplinary science framework. The Science Education degree ensures students are thoroughly educated in their content discipline and modern theories of learning and education. Graduates are in high demand as STEM education and careers continue to grow in demand.

Science Education Major Change (CODO) Requirements

Degree Requirements

127 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science

- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click [here](#).

Departmental/Program Major Courses

Required Science Education Core Courses (27-30 credits)

Required Chemistry Selective Courses (4-5 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦

Required Computing Option (4 credits)

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Required Calculus Selective Courses (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- AND**
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Required Physics Selective Courses (8 credits)

(satisfies Science for core)

- PHYS 17200 - Modern Mechanics ♦ - Honors version REQUIRED and
- PHYS 27200 - Electric And Magnetic Interactions ♦ - Honors version REQUIRED

Required Statistics Selective Courses (3 credits)

- STAT 30100 - Elementary Statistical Methods (satisfies Information Literacy for core)

Educational Program Course Requirements (40-41 credits)

Professional Education GPA Average ≥ 3.00 - no grade lower than C-

- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 20500 - Exploring Teaching As A Career (2 credits required; satisfies Written Communication for core)
- EDCI 27000 - Introduction To Educational Technology And Computing (1 credit required; satisfies Information Literacy for core)
- EDCI 28500 - Multiculturalism And Education (2 credits required; satisfies Behavioral/Social Science for core)
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems (1 credit required)
- EDCI 35000 - Community Issues & Applications For Educators (1 credit required)
- EDCI 37001 - Teaching And Learning English As A New Language (2 credits required)
- EDCI 42400 - The Teaching Of Earth And Physical Science In The Secondary Schools
- EDCI 49800 - Supervised Teaching (12 credits required)
- EDPS 23500 - Learning And Motivation (2 credits required; satisfies Behavioral/Social Science for core)
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 26501 - The Inclusive Classroom
- EDPS 32700 - Classroom Assessment (1 credit required)
- EDPS 36201 - Positive Behavioral Supports (2 credits required)
- EDPS 43010 - Secondary Creating And Managing Learning Environments (2 credits required)
- EDST 20010 - Educational Policies And Laws (1 credit required)
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary

Physics Concentration (30-31 credits)

Overall GPA for Physics Concentration courses with the Departmental/Program Major Courses must be ≥ 2.5

Required courses for the Physics Concentration that are met within Department/Program requirements, but included in the content GPA for this concentration:

- CHM 11500/12500/12300
- PHYS 17200/17200H (note: Majors in Physics must take the Honors Versions)
- PHYS 27200/27200H (note: Majors in Physics must take the Honors Versions)
- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 31000 - Intermediate Mechanics
- PHYS 33000 - Intermediate Electricity And Magnetism
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- PHYS 36000 - Quantum Mechanics
- PHYS 42200 - Waves And Oscillations
- PHYS 45000 - Intermediate Laboratory
- CHM 11600 - General Chemistry ♦ (satisfies Science for core) or

- CHM 12600 - Introduction To Chemistry II ♦ (satisfies Science for core) or
- CHM 13600 - General Chemistry Honors ♦

PHYS Major Selectives (6-7 credits)

- PHYS 53600 - Electronic Techniques For Research or
- PHYS 58000 - Computational Physics
- PHYS/ASTR \geq 300 level - Credit Hours: 3.00
- Science/Engineering \geq 300 level (met with STAT 30100)
- Science/Engineering \geq 300 level (met with Great Issues Option)

Other Departmental /Program Course Requirements (13-26 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition

Met with EDCI 20500 (satisfies Written Communication and Information Literacy for core).

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^{^*} (0-6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I - Met with EDCI 28500
- Language & Culture Option II
- Language & Culture Option III

General Education[^] (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - met with EDPS 23500
- General Education Option II

- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with EDCI 42400 in major.

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with EDCI 49800 in major.

Required Pre-Requisite Course (4-5 Credits)

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Optional Concentration

K-12 Integrated STEM Optional Concentration for Education

Electives (0-11 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)

- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- EDCI 20500 - Exploring Teaching As A Career
- PHYS 17200 - Modern Mechanics ♦ (HONORS)
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection Language & Culture - Credit Hours: 3.00

17-19 Credits

Spring 1st Year

- EDCI 28500 - Multiculturalism And Education
- EDCI 35000 - Community Issues & Applications For Educators
- EDST 20010 - Educational Policies And Laws
- PHYS 27200 - Electric And Magnetic Interactions ♦ (HONORS)
- CHM 11600 - General Chemistry ♦ or

- CHM 12600 - Introduction To Chemistry II ♦ or
- CHM 13600 - General Chemistry Honors ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

16-18 Credits

Fall 2nd Year

- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 37001 - Teaching And Learning English As A New Language
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 36201 - Positive Behavioral Supports
- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

18-19 Credits

Spring 2nd Year

- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDPS 23500 - Learning And Motivation
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 26501 - The Inclusive Classroom
- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 42200 - Waves And Oscillations
- STAT 30100 - Elementary Statistical Methods

15 Credits

Fall 3rd Year

- EDCI 27000 - Introduction To Educational Technology And Computing
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems
- PHYS 31000 - Intermediate Mechanics
- PHYS 33000 - Intermediate Electricity And Magnetism
- PHYS 45000 - Intermediate Laboratory
- Science Core Selection TWTP (COM 21700 strongly recommended) - Credit Hours: 3.00
- Science Core Selection Language & Culture - Credit Hours: 3.00

17 Credits

Spring 3rd Year

- PHYS 36000 - Quantum Mechanics
- CS 17700 - Programming With Multimedia Objects or
- CS 18000 - Problem Solving And Object-Oriented Programming
- EDCI 42800 - Teaching Science In The Middle And Junior High School or
- EDCI 55800 - Integrated Science, Technology, Engineering And Mathematics (STEM) Education Methods-Secondary
- PHYS 53600 - Electronic Techniques For Research or
- PHYS 58000 - Computational Physics
- Science Core Selection General Education - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- EDCI 42400 - The Teaching Of Earth And Physical Science In The Secondary Schools
- EDPS 32700 - Classroom Assessment
- EDPS 43010 - Secondary Creating And Managing Learning Environments
- PHYS/ASTR \geq 300 level - Credit Hours: 3.00
- Science Core Selection Great Issues - Credit Hours: 3.00
- Science Core Selection General Education - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

17 Credits

Spring 4th Year

- EDCI 49800 - Supervised Teaching - Spring only

12 Credits

Notes

Note: This degree is intended to give students many options. Students need to consult with a College of Science Academic Advisor regarding requirements.

2.5 average in Physics concentration courses required to graduate

3.0 average in Professional Education courses (No grade below a C-)

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.

- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Certificate

Applications in Data Science Certificate

Data science involves the development or application of statistical, mathematical and algorithmic techniques or tools with an aim to extract knowledge from large-scale and/or complex datasets and communicate findings.

The Applications in Data Science Undergraduate Certificate program's learning outcomes will consist of the following:

1. Describe the stages of the data life cycle (data acquisition, organization, curation, analysis, preservation, and communication) and create an effective data management and data analysis plan
2. Develop a foundation in statistical, mathematical and algorithmic techniques or tools for the analysis of large-scale datasets
3. Apply statistical, mathematical and algorithmic techniques or tools in order to extract knowledge and insights from large-scale datasets
4. Interpret results from large-scale data analysis and communicate findings
5. Identify ethical and social implications of data-science-driven decision making and policies and one's own ethical and social responsibilities when working with data

Requirements for the Certificate (16 credits)

Core Courses (10 credits)

Foundation in Statistical Methods - Choose One (3 credits)

Education

- EDPS 55600 - Introduction To Quantitative Data Analysis Methods In Education I
- EDPS 55700 - Introduction To Quantitative Data Analysis Methods In Education II

Engineering

- AAE 36100 - Introduction To Random Variables In Engineering *
- CHE 32000 - Statistical Modeling And Quality Enhancement
- ECE 20875 - Python For Data Science
- ECE 30200 - Probabilistic Methods In Electrical And Computer Engineering
- IDE 36000 - Multidisciplinary Engineering Statistics
- IE 33000 - Probability And Statistics In Engineering II

Health and Human Sciences

- PSY 20100 - Introduction To Statistics In Psychology

Liberal Arts

- ANTH 30600 - Quantitative Methods For Anthropological Research
- COM 30400 - Quantitative Methods For Communication Research
- COM 41100 - Communication And Social Networks
- POL 30000 - Introduction To Political Analysis
- POL 50100 - Political Science: Methodology
- SOC 40900 - Social Networks

Management

- ECON 36000 - Econometrics
- MGMT 30500 - Business Statistics
- MGMT 30600 - Management Science

Science

- BIOL 39500 - Special Assignments *
- BIOL 58210 - Ecological Statistics

- BIOL 59500 - Special Assignments *
- EAPS 31000 - Introductory Statistics For Geosciences
- STAT 22500 - Introduction To Probability Models
- STAT 30100 - Elementary Statistical Methods
- STAT 35000 - Introduction To Statistics
- STAT 35500 - Statistics For Data Science
- STAT 50100 - Experimental Statistics I
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods

Foundation in Computation - Choose One (3 credits)

Agriculture

- ABE 20500 - Computations For Engineering Systems
- ABE 30100 - Numerical And Computational Modeling In Biological Engineering
- ASM 10500 - Computing Technology With Applications

Engineering

- ECE 26400 - Advanced C Programming
- ECE 36800 - Data Structures
- ECE 46900 - Operating Systems Engineering
- ECE 47300 - Introduction To Artificial Intelligence
- IE 33200 - Computing In Industrial Engineering

Management

- MGMT 28800 - Programming For Business Applications

Polytechnic

- CNIT 10500 - Introduction To C Programming
- CNIT 13600 - Personal Computing Technology And Applications
- CNIT 17600 - Information Technology Architectures

Science

- CS 10100 - Digital Literacy
- CS 15900 - C Programming
- CS 17700 - Programming With Multimedia Objects
- CS 18000 - Problem Solving And Object-Oriented Programming
- CS 23500 - Introduction To Organizational Computing

Foundation in Data Literacy, Management, and Analytics - Choose One (3 credits)

Agriculture

- BCHM 42100 - R For Molecular Biosciences
- ENTM 24200 - Data Science

Data Mine

- STAT 19000 - Topics In Statistics For Undergraduates *The Data Mine I*
- STAT 19000 - Topics In Statistics For Undergraduates *The Data Mine II*
- STAT 29000 - Topics In Statistics For Undergraduates *The Data Mine III*
- STAT 29000 - Topics In Statistics For Undergraduates *The Data Mine IV*
- STAT 39000 - Topics In Statistics For Undergraduates *The Data Mine V*
- STAT 39000 - Topics In Statistics For Undergraduates *The Data Mine VI*
- STAT 49000 - Topics In Statistics For Undergraduates *The Data Mine VII*

- STAT 49000 - Topics In Statistics For Undergraduates *The Data Mine VIII*

Engineering

- ECE 20875 - Python For Data Science
- ECE 29595 - Selected Topics In Electrical And Computer Engineering *
- ECE 30010 - Introduction To Machine Learning And Pattern Recognition
- ECE 47300 - Introduction To Artificial Intelligence

Liberal Arts

- ILS 59500 - Special Topics In Information And Data Science *
- PHIL 20700 - Ethics For Technology, Engineering, And Design
- SCLA 59000 - Special Topics *

Management

- MGMT 38200 - Management Information Systems
- MGMT 54400 - Database Management Systems

Polytechnic

- CNIT 48800 - Data Warehousing
- CNIT 57000 - IT Data Analytics

Science

- BIOL 59500 - Special Assignments *
- CS 24200 - Introduction To Data Science
- CS 25100 - Data Structures And Algorithms
- STAT 24200 - Introduction To Data Science

Foundation in Data Ethics and Digital Citizenship - Choose One (1-4 credits)

Liberal Arts

- HONR 49900 - Honors Research Project *
- ILS 23000 - Data Science And Society: Ethical Legal Social Issues
- ILS 29500 - Special Topics In Information And Data Science *
- PHIL 20700 - Ethics For Technology, Engineering, And Design
- PHIL 20800 - Ethics Of Data Science
- PHIL 29000 - Environmental Ethics
- PHIL 29300 - Selected Topics In Philosophy *

Application Focus (6 credits)

Students need to complete six (6) credit hours in courses concentrated on applications of data science related knowledge.

Agriculture

- ABE 49800 - Undergraduate Research In Agricultural And Biological Engineering *
- AGECE 30500 - Agricultural Prices
- AGECE 32100 - Principles Of Commodity Marketing
- AGECE 35200 - Quantitative Techniques For Firm Decision Making
- AGECE 42100 - Advanced Commodity Marketing
- AGECE 45100 - Applied Econometrics
- AGECE 49800 - Special Problems *
- AGECE 49900 - Thesis *

- AGECE 50600 - Agricultural Marketing And Price Analysis
- AGECE 51600 - Mathematical Tools For Agricultural And Applied Economics
- AGECE 55200 - Introduction To Mathematical Programming
- AGR 33300 - Data Science For Agriculture
- AGRY 32000 - Genetics
- AGRY 39900 - Individual Study *
- AGRY 44400 - Weather Analysis And Forecasting
- AGRY 48500 - Precision Crop Management
- AGRY 53000 - Advanced Plant Genetics
- AGRY 54500 - Remote Sensing Of Land Resources
- AGRY 56500 - Soils And Landscapes
- AGRY 59800 - Special Problems *
- ANSC 31100 - Animal Breeding And Genetics
- ANSC 51100 - Population Genetics
- ASEC 49000 - Special Problems *
- ASEC 49700 - Thesis Research *
- ASEC 49900 - Special Problems In Agricultural Communication *
- ASEC 59000 - Special Problems *
- ASM 42200 - Advanced Machine Technology For Agricultural Crop Production
- ASM 49000 - Special Problems *
- ASM 49500 - Agricultural Systems Management Capstone Project *
- ASM 54000 - Geographic Information System Application
- BCHM 42200 - Computational Genomics
- BCHM 49800 - Research In Biochemistry *
- BCHM 49801 - Head Start To Biochemistry Research *
- BCHM 52100 - Comparative Genomics
- BTNY 30200 - Plant Ecology
- BTNY 49800 - Research In Plant Science *
- BTNY 53500 - Plant Disease Management
- ENTM 30100 - Experimentation And Analysis
- ENTM 41000 - Applied Insect Biology
- ENTM 41001 - Insects Of Urban Landscapes
- ENTM 41002 - Insects Of Agricultural Crops
- ENTM 49310 - Insect Biology Capstone Experience *
- ENTM 49700 - Special Problems In Forensic Science *
- ENTM 49800 - Special Problems In Entomology *
- FNR 21000 - Natural Resource Information Management
- FNR 34800 - Wildlife Investigational Techniques
- FNR 35100 - Aquatic Sampling Techniques
- FNR 35300 - Natural Resources Measurement
- FNR 35500 - Quantitative Methods For Resource Management
- FNR 35700 - Fundamental Remote Sensing
- FNR 35910 - Spatial Ecology
- FNR 35950 - Spatial Ecology Laboratory
- FNR 38400 - Statistics For Natural Resources
- FNR 49800 - Special Assignments *
- FNR 55800 - Remote Sensing Analysis And Applications
- FS 44400 - Statistical Process Control

- FS 49100 - Special Assignments In Food Science *
- HORT 49100 - Special Assignments In Horticulture *
- HORT 53000 - Introduction To Computing For Biologists
- HORT 53100 - Applied Plant Genomics
- HORT 55100 - Plant Responses To The Environment
- LA 49000 - Special Problems In Landscape Architecture *
- NRES 49800 - Individual Studies In Environmental Science *
- SFS 39100 - Special Problems In Sustainable Food And Farming Systems *

Data Mine

To fulfill the Application Focus, these STAT courses must be taken as a Data Mine Corporate Partners course. The Application Area will depend on the Corporate Partner.

- STAT 19000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners I*
- STAT 19000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners II*
- STAT 29000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners III*
- STAT 29000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners IV*
- STAT 39000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners V*
- STAT 39000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners VI*
- STAT 49000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners VII*
- STAT 49000 - Topics In Statistics For Undergraduates *Data Mine Corporate Partners VIII*

Education

- EDCI 52800 - Human Performance Technology
- EDCI 55700 - Assessment Of Culturally And Linguistically Diverse Students
- EDCI 56400 - Integration And Management Of Technology For Learning
- EDCI 57700 - Strategic Assessment And Evaluation
- EDPS 32700 - Classroom Assessment
- EDPS 53100 - Introduction To Measurement And Instrument Design
- EDPS 53300 - Introduction To Educational Research I: Methodology
- EDPS 53400 - Introduction To Educational Research II: Measurement Consideration

Engineering

- ABE 31400 - Design Of Electronic Systems
- ABE 45000 - Finite Element Method In Design And Optimization
- ABE 46000 - Sensors And Process Control
- ABE 52700 - Computer Models In Environmental And Natural Resources Engineering
- ABE 53100 - Instrumentation And Data Acquisition
- ABE 59100 - Special Topics *
- BME 40100 - Mathematical & Computational Analysis Of Complex System Dynamics In Biology, Medicine, & Healthcare
- CE 40800 - Geographic Information Systems In Engineering
- CHE 45000 - Design And Analysis Of Processing Systems
- ECE 30834 - Fundamentals Of Computer Graphics

- ECE 43800 - Digital Signal Processing With Applications
- ECE 44000 - Transmission Of Information
- ECE 47300 - Introduction To Artificial Intelligence
- ECE 57700 - Engineering Aspects Of Remote Sensing
- EEE 25000 - Environmental, Ecological, and Engineering Systems
- EEE 30000 - Environmental And Ecological Systems Modeling
- ENGR 37920 - Junior Participation In Vertically Integrated Projects (VIP) *
- ENGR 47920 - Senior Participation In Vertically Integrated Projects (VIP) *
- ENGR 47921 - Senior Design Participation In Vertically Integrated Projects (VIP) I *
- ENGR 47922 - Senior Design Participation In Vertically Integrated Projects (VIP) II *
- IE 33500 - Operations Research - Optimization
- IE 33600 - Operations Research - Stochastic Models
- IE 59000 - Topics In Industrial Engineering *
- ME 36500 - Measurement And Control Systems I
- ME 37500 - Measurement And Control Systems II
- NUCL 59700 - Nuclear Engineering Projects I *

Health and Human Sciences

- HTM 50200 - Management Information Systems For The Hospitality Industry
- HTM 50300 - Business Statistics And Quantitative Analysis In Hospitality
- PSY 20200 - Introduction To Quantitative Topics In Psychology
- PSY 30500 - Understanding And Analyzing Psychological Data
- PSY 39800 - Independent Research In Psychology *
- PSY 49800 - Senior Research *
- PSY 51300 - Introduction To Computational Cognitive Neuroscience
- PSY 51400 - Introduction To Mathematical Psychology
- PUBH 40500 - Principles Of Epidemiology
- PUBH 60100 - Introduction To The Quantitative Methods Of Public Health

Liberal Arts

- ANTH 52300 - GIS For Humanities And Social Science Research
- PHIL 20800 - Ethics Of Data Science
- PHIL 29000 - Environmental Ethics
- PHIL 29300 - Selected Topics In Philosophy *
- POL 22800 - Data Science And Public Policy
- POL 22900 - Emerging Problems In Political Science *
- SOC 34000 - General Social Psychology
- SOC 38300 - Introduction To Research Methods In Sociology

Management

- ECON 32500 - Economics Of Sports
- ECON 36000 - Econometrics
- ECON 47100 - Behavioral Economics
- ECON 48500 - Economics Of Racial And Gender Discrimination

- ECON 56200 - Econometrics I
- ECON 57300 - Financial Econometrics
- ECON 58500 - Behavioral Economics
- MGMT 30500 - Business Statistics
- MGMT 30600 - Management Science
- MGMT 38200 - Management Information Systems
- MGMT 40500 - Six Sigma And Quality Analytics
- MGMT 42110 - Marketing Analytics
- MGMT 46300 - Supply Chain Analytics
- MGMT 47200 - Advanced Spreadsheet Modeling And Simulation
- MGMT 47300 - Data Mining
- MGMT 47400 - Predictive Analytics
- MGMT 47900 - Data Visualization
- MGMT 48800 - Data-Driven Decisions In Digital Markets
- MGMT 52500 - Marketing Analytics
- MGMT 54400 - Database Management Systems

Polytechnic

- AT 31900 - Unmanned Aerial Systems Applications, Data And Documentation
- CGT 27000 - Introduction To Data Visualization
- CGT 31301 - The Business Of Managing Digital Product Data
- CGT 35600 - Web Programming, Development And Data Integration
- CGT 37000 - Interactive Data Visualization
- CGT 37700 - Scientific Visualization
- CGT 45600 - Advanced Web Programming, Development And Data Integration
- CGT 46000 - Building Information Modeling For Commercial Construction
- CGT 47000 - Data Visualization Studio
- CGT 51200 - Foundational Readings Of User Experience Design
- CGT 52000 - Computer Graphics Programming
- CGT 52100 - Advanced Real-Time Computer Graphics
- CGT 58100 - Workshop In Computer Graphics Technology *
- CGT 67000 - Applications In Visual Analytics
- CNIT 37200 - Database Programming
- CNIT 39200 - Enterprise Data Management
- CNIT 48101 - Topics In Computer Information Technology IV *
- CNIT 48700 - Database Administration
- CNIT 55900 - Data Warehousing
- CNIT 57000 - IT Data Analytics
- CNIT 58100 - Workshop In Computer Technology *
- CNIT 62300 - Contemporary Computer Technology Problems *
- ECET 32700 - Instrumentation And Data Acquisition Design
- ECET 35901 - Computer Based Data Acquisition Applications
- IET 41300 - Problem-Solving With Automatic Data Collection
- TECH 53300 - Design Theory And Technology

Science

- AGRY 60000 - Genomics
- BCHM 42200 - Computational Genomics
- BCHM 52100 - Comparative Genomics
- BIOL 29400 - Biology Research *
- BIOL 31200 - Great Issues Genomics And Society
- BIOL 44207 - Exploration Of Protein Structure
- BIOL 44400 - Human Genetics
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 49400 - Biology Research *
- BIOL 49900 - Biology Honors Thesis Research *
- BIOL 56310 - Protein Bioinformatics
- BIOL 58210 - Ecological Statistics
- BIOL 61100 - Crystallography Of Macromolecules
- CS 30700 - Software Engineering I
- CS 34800 - Information Systems
- CS 37300 - Data Mining And Machine Learning
- CS 47300 - Web Information Search And Management
- EAPS 30900 - Computer-Aided Analysis For Geosciences
- EAPS 32000 - Physics Of Climate
- EAPS 42000 - Global Change Modeling
- EAPS 50700 - Introduction To Analysis And Computing With Geoscience Data
- EAPS 50900 - Data Analysis Techniques In Earth And Atmospheric Sciences
- EAPS 51000 - Climate Time Series Analysis
- EAPS 52300 - Radar Meteorology
- EAPS 53000 - Extreme Weather And Climate: Science And Risk
- EAPS 54000 - Introduction To Geodesy
- EAPS 54100 - Geodetic Data And Applications
- EAPS 55700 - Introduction To Seismology
- EAPS 55900 - Topics In Seismology *
- EAPS 59100 - Advanced Topics In Earth And Atmospheric Sciences *

Notes

- * - Course requires approval before it can be used for this certificate (special topics, special assignments, research, etc). For a list of course titles already approved, [click here](#) (link will be provided).
- If course taken is in The Data Mine Learning Community as 1 credit seminar, 3 seminars must be taken to fulfill this requirement.
- A minimum of 6 credits must be in coursework outside the student's major requirements.
- A grade of C- or better must be earned in any course used to fulfill the certificate. Students may also use a Pass (P) in any course used to fulfill the certificate.
- Students with a Data Science major are not permitted to receive the Applications In Data Science Certificate.
- Transfer credit brought in as an equivalent course is allowed to apply to the certificate requirements; undistributed transfer credit cannot be applied.

Prerequisite Information

For current pre-requisites for courses, [click here](#).

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Learning Beyond the Classroom Certificate

Learning Beyond the Classroom (LBC) is open only to students majoring in the College of Science. It is a voluntary program aimed at encouraging you, the College of Science student, to engage in activities that provide hands-on experience and opportunities to apply classroom knowledge. Successful completion of the LBC program will be noted on your official Purdue transcript. You will also receive a certificate of completion.

Participation in LBC involves attending, organizing, or leading activities that fall into three general categories: career and professional development; service, citizenship and leadership; and experience with domestic and international diversity. Progress in each of the three areas is tracked by a point system. Points are earned by submitting reports on participation in activities. The number of points earned varies with the intensity of the activity.

[Learning Beyond the Classroom website](#)

Requirements for the Certificate

Completing the LBC certificate requires that you:

1. Accumulate a total of 24 points, with at least 4 points in each of 3 categories.
2. Participate in at least one intensive activity lasting an extended period of time, such as semester-long study abroad, full-time summer internship, two (consecutive) semesters of undergraduate research, an entrepreneurial activity together with the certificate of Entrepreneurship and Innovation, and academic year resident assistant. Such an activity is worth 10 points.
3. Include either (a) 3 credits of approved coursework with grades of P or C- or higher (one or more courses totaling 3 credits can meet this requirement) or (b) a semester-long study abroad program (worth 10 points) or some combination of spring break (4 points) and/or summer study abroad activities (6 points), totaling 10 points.
4. In most cases, a maximum of 6 points per year and 10 points in total may be earned for any particular activity. It is estimated that completion of the certificate will take approximately 30 hours over your college career in addition to the intensive 10-point activity described above.

[Learning Beyond the Classroom Details](#)

Courses

Among the requirements of the Learning Beyond the Classroom Certificate Program is that you participate in either (a) approved coursework with grades of P (pass) or C- or higher (one or more courses totaling 3 credits meets this requirement) or (b) semester-long study abroad or the equivalent.

Below you will find a table of courses that have been identified as meeting the objectives of this program. If there is an experiential course which is not here that you believe to be similar to those listed, contact the administrator. The College of Science Office of Undergraduate Education reserves the right to determine whether a course meets the program criteria.

- AGR 49000 - Special Problems
 - International Development Strategies
- BIOL 11500 - Biology Resource Seminar
- BIOL 19700 - Biology Freshman Honors Seminar

- BIOL 29300 - Sophomore Seminar: Planning Your Future In Biology
- BIOL 29400 - Biology Research
- BIOL 29500 - Special Assignments
 - Teaching Biology
- BIOL 39300 - Preparing For Your Future In Biology
- BIOL 49400 - Biology Research
- BIOL 49700 - Biology Honors Seminar
- BIOL 49800 - Biology Teaching
- BIOL 49900 - Biology Honors Thesis Research
- CHM 19400 - Freshman Chemistry Orientation
- CHM 19700 - Chemistry Freshman Honors Research
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 49400 - Junior-Senior Chemistry Seminar
- CHM 49900 - Special Assignments
- CS 19100 - Freshman Resources Seminar
- CS 19700 - Freshman Honors Seminar
- CS 29000 - Topics In Computer Sciences
 - Individual Study
- CS 29100 - Sophomore Development Seminar
- CS 39000 - Topics In Computer Sciences
- CS 39100 - Junior Resources Seminar
- CS 49000 - Topics In Computer Sciences For Undergraduates
 - Indiv Study or Part-time Prof Experience CS
- CS 49700 - Honors Research Project
- EAPS 10900 - The Dynamic Earth
- EAPS 11800 - Introduction To Earth Sciences
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences
- EAPS 19100 - Introductory Topics In Earth And Atmospheric Science
 - Service Learning in Outreach
- EAPS 35200 - Structural Geology
- EAPS 35300 - Earth Surface Processes
- EAPS 39000 - Geologic Field Methods
- EAPS 39100 - Topics In Earth And Atmospheric Sciences
 - Team Weather Forecasting or Meteorology Intern
- EAPS 41900 - Internship In Environmental Geosciences
- EAPS 43400 - Weather Analysis And Forecasting
- EAPS 49400 - Earth And Atmospheric Sciences Undergraduate Seminar
- EAPS 49700 - Earth And Atmospheric Sciences Undergraduate Readings And Research
- EAPS 55600 - Planetary Geology
- EAPS 59000 - Field Geology North America
- ECE 37900 - Junior Participation In Vertically Integrated Projects (VIP) In Electrical And Computer Engineering
- ECE 47900 - Senior Participation In Vertically Integrated Projects (VIP) In Electrical And Computer Engineering
- EDCI 20500 - Exploring Teaching As A Career
- EDCI 49000 - Individual Research And Teaching Experience
 - Science Teaching Service Learning
- EDCI 49800 - Supervised Teaching
- ENTM 49800 - Special Problems In Entomology

- Indiv Study or Forensic Teaching Assistant
- ENTR 48000 - Entrepreneurship Capstone
- EPCS 10100 - First Year Participation In EPICS
- EPCS 10200 - First Year Participation In EPICS
- EPCS 20100 - Sophomore Participation In EPICS
- EPCS 20200 - Sophomore Participation In EPICS
- GS 19501 - Preparing For Your Undergraduate Research Experience
- GS 29501 - Understanding Your Undergraduate Research Experience I
- GS 39501 - Understanding Your Undergraduate Research Experience II
- GS 49000 - Directed Reading In General Studies
 - Purdue Promise Facilitation Course or Discovery Park Undergr Res
- MA 10800 - Mathematics As A Profession And A Discipline
- MA 17000 - Introduction To Actuarial Science
- MA 48400 - Seminar On Teaching College Algebra And Trigonometry
- MA 49000 - Topics In Mathematics For Undergraduates
- MCMP 49000 - Special Topics
 - Indiv Study or TA for MCMP 20400/MCMP 20500 lab
- PHYS 10400 - First Year Physics Seminar
- PHYS 21700 - Introduction To Current Physics And Forefront Research Honors
- PHYS 23500 - Seminar In Careers In Physics
- PHYS 49000 - Special Assignments
- PHYS 59000 - Reading And Research
- PHYS 59300 - Independent Research
- PSY 39000 - Research Experience In Psychology
- SCI 10000 - Multicultural Leadership Seminar
- SCI 19500 - Special Topics In Science
 - Global Science Leadership Seminar
- SCI 39500 - Special Topics In Science
 - Global Science Experience
- SCI 49000 - Topics In Science For Undergraduates
 - Dean's Leadership Forum
- STAT 17000 - Introduction To Actuarial Science
- STAT 19000 - Topics In Statistics For Undergraduates
 - First Year Statistics Seminar
- STAT 29000 - Topics In Statistics For Undergraduates
 - Rising Above the Storm
- STAT 47201 - Actuarial Models- Life Contingencies
- STAT 47901 - Short Term Actuarial Models
- STAT 49000 - Topics In Statistics For Undergraduates

Notes

- Students who are enrolling in EDCI 49800 or ENTR 48000 during their final semester and wish to receive points toward LBC should alert LBC of their plans at the beginning of the semester.

Prerequisite Information

For current pre-requisites for courses, [click here](#).

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Department of Biological Sciences

About the Biological Sciences Program

Discovery. This word captures our purpose, commitment, and vision. As a leading department in a major research university, our mission is to effectively integrate learning, discovery, and engagement **in an inclusive environment**. The best learning is experiential, and leads to a clear understanding of how discoveries are made, how science is conducted, and how ideas are communicated. The best learning is facilitated by faculty who are active in research and who can **all** engage students in the excitement of biology. And the best learning results in alumni who are well-prepared to successfully pursue their chosen careers.

As we discover the many facets of biocomplexity, from vast ecosystems to the structure and function of individual molecules, we remain committed to our mission. Our faculty, staff, and students are engaged with the communities of science and education, the worlds of industry and business, and our alumni and friends. To each individual who joins us, we promise opportunities to experience the excitement of discovery in biology. We welcome and encourage you to become a part of our team-as a student, alumnus, corporate partner, scientific collaborator, or a member of our faculty and staff. Join us on our journey of learning, discovery, and engagement. Discover Biology at Purdue!

Department of Biological Sciences Website

Faculty

Contact Information

The Department of Biological Sciences address is:
915 W. State Street West Lafayette, IN 47907-2054

Main Office

Contact person: Amanda Jenkins
Phone Number: (765) 494-4408
Fax No. is: (765) 494-0876

Graduate Information

For Graduate Information please see Biological Sciences Graduate Program Information.

Baccalaureate

Biology, BS

About the Program

The Biology major allows a student to pursue a general curriculum with the bachelor of science as a terminal degree or as preparation for graduate work or professional school. This major is designed to give a student maximum flexibility in designing a plan of study suited to individual needs and interests. This curriculum is excellent preparation for a number of careers in both academic and industrial research and professions in medicine, dentistry, and veterinary medicine.

Biology Website

Biology Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education

- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses (35-36 credits)

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (fulfills Science, Technology, & Society for core; also fulfills Multidisciplinary Experience for College of Science Core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-Honors

Intermediate Selective (2-4 credits)

Choose one of the options below.

- BIOL 32800 - Principles Of Physiology
- BIOL 36700 - Principles Of Development
- BIOL 39500 - Special Assignments -Macromolecules
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology

Upper Level Biology Coursework (13 credits)

Must have 12 credits of electives from the Biology Selectives and the Base Lab requirements.

Base Lab requirements may overlap with Groups A and/or B, but must still have 12 credits of selectives total.

These 12 credits may not overlap with the Biology Intermediate or Chemistry Selective requirements.

- CHM 33901 - Biochemistry Laboratory

Group A Selective (at least 3 credits)

- BIOL 39500 - Special Assignments
Title: Macromolecules
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 48100 - Eukaryotic Genetics
- BIOL 49500 - Special Assignments
Title Options: Energy Transduction in Society; RNA World: CRISPR & Coronavirus
- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 51700 - Molecular Biology: Proteins
- BIOL 52900 - Bacterial Physiology
- BIOL 53300 - Medical Microbiology
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 56200 - Neural Systems
- BIOL 56310 - Protein Bioinformatics
- BIOL 59500 - Special Assignments
Title Options: Cell Biology of Plants; CryoEM 3D Reconstruction; Genomics & Omics of Host-Microbe Interactions; Intro to X-Ray Crystallography; Meth Meas Biophys Chem; Neural Mech Health & Disease; Neurobiol Learning & Memory; Pathways Human Health & Disease; Practical Bio Comput; Theory of Molecular Methods
- BCHM 43400 - Medical Topics In Biochemistry
- BCHM 56100 - General Biochemistry I
- BCHM 56200 - General Biochemistry II
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

Group B Selective (at least 3 credits)

- BIOL 32800 - Principles Of Physiology

- BIOL 36700 - Principles Of Development
- BIOL 39500 - Special Assignments
Title: Exp Dsgn & Quant Analys I-Honors
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49500 - Special Assignments
Title Options: Data Science: Good Versus Bad Data; Genomics & Infectious Diseases
- BIOL 53700 - Immunobiology
- BIOL 58000 - Evolution
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59100 - Field Ecology
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments
Title Options: Disease Ecology; Ecology
- HORT 30100 - Plant Physiology

BIOL 500-level Selective (at least 3 credits)

Select one BIOL 500-level course from Group A or Group B.

Additional Selective Course

- Any course not taken in Group A or Group B
- BIOL 44100 - Biology Senior Seminar In Genetics (credit not allowed for both BIOL 44201 and CHM 33901)
- BIOL 49400 - Biology Research , maximum 3 credits
- BIOL 49900 - Biology Honors Thesis Research , maximum 3 credits
- BIOL 59500 - Special Assignments -Laboratory in Ecology

Base Lab Requirement

Click Base Lab Requirements for all Biology majors for additional lists.

Other Departmental Requirements: (51-76 credits)

Chemistry Selectives (16-17 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*

Organic Chemistry

- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory

Chemistry Selective

Choose one.

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

*Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and 33901.

Physics Selectives (8 credits)

Select one sequence.

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Calculus Selectives (6-10 credits)

Choose one sequence.

- MA 16010 - Applied Calculus I
- MA 16020 - Applied Calculus II
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I
- MA 16600 - Analytic Geometry And Calculus II

College Of Science Core Requirements

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (8-34 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments (See above for specific titles.) or
- ABE 22600 - Biotechnology Laboratory I
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00

- Elective - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Elective - Credit Hours: 3.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- Chemistry Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-17 Credits

Fall 3rd Year

- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Intermediate Biology Selective - Credit Hours: 3.00

- Group A Selective - Credit Hours: 2.00 - 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory
- Group B Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Team-Building & Collaboration - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

14-15 Credits

Fall 4th Year

- STAT 50300 - Statistical Methods For Biology
- Base Lab Requirement - Credit Hours: 2.00 - 4.00
- Great Issues in Science - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

14-18 Credits

Spring 4th Year

- Biology Selective 50000 Level - Credit Hours: 3.00
- Biology Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Cell, Molecular, and Developmental Biology, BS

About the Program

Understanding how eukaryotic cells process information from their environment and initiate programs of gene expression leading to growth, development, and functional specification is the essence of a cell, molecular, and developmental (CMD) biology major. Students enrolled in this curriculum will take courses providing a solid foundation in the molecular biology of cells and gain a full appreciation of how molecular complexes interact to make a cell function. This fundamental knowledge in cell and molecular biology will be applied through further coursework in genetics and developmental biology to examine how eukaryotic organisms function and how specific aspects of that function are perturbed by disease. Within the CMD major, students have the option of focusing their studies on animal systems, plant systems, or both. Graduates with a CMD major are well-prepared to pursue careers in academic or industrial research, biotechnology, genetic engineering, medicine, veterinary medicine, and other health-related professions.

Cell, Molecular, and Developmental Biology Website

Cell, Molecular, and Developmental Biology Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (39-41 credits)

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (satisfies Science, Technology & Society Selective for core)(May also meet Multidisciplinary Experience requirement for College of Science core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments or
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr 1 Bio Lab Phges Flds-Honors
- ABE 22600 - Biotechnology Laboratory I
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution

Upper Level Biology Coursework (13 credits)

*Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and CHM 33901.

- CHM 33901 - Biochemistry Laboratory

CMBD Selective I (5-6 credits)

Choose two courses from the following list. Neither course may overlap with Intermediate Biology or Biology Selective requirements.

- BIOL 36700 - Principles Of Development
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 48100 - Eukaryotic Genetics

CMBD Selective II (3 credits)

- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 59500 - Special Assignments
 - Cell Biology Of Plants
 - Pathways Human Health & Disease
 - Theory Of Molecular Methods

Chemistry Selective (3 credits)

Choose one.

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach *
- CHM 43300 - Biochemistry

Intermediate Biology Selective (3 credits)

Choose one option below; cannot duplicate CMBD or Biology Selectives.

- BIOL 36700 - Principles Of Development
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 42000 - Eukaryotic Cell Biology

Biology Selective (3 credits)

- BCHM 43400 - Medical Topics In Biochemistry
- BIOL 39500 - Special Assignments
 - Title Options: Macromolecules; Exp Dsgn&Quant Analys I-Honors*
- BIOL 41600 - Viruses And Viral Disease
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 48100 - Eukaryotic Genetics
- BIOL 48300 - Great Issues: Environmental And Conservation Biology

- BIOL 49500 - Special Assignments
Title Options: Data Science: Good Versus Bad Data; Energy Transduction in Society; Genomics & Infectious Diseases; RNA World: CRISPR & Coronavirus
- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 51700 - Molecular Biology: Proteins
- BIOL 52900 - Bacterial Physiology
- BIOL 53300 - Medical Microbiology
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 53700 - Immunobiology
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 56200 - Neural Systems
- BIOL 56310 - Protein Bioinformatics
- BIOL 58000 - Evolution
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59100 - Field Ecology
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments
Title Options: Cell Biology Of Plants; CryoEM 3D Reconstruction; Disease Ecology; Ecology; Genomics & Omics of Host-Microbe Interactions; Intro to X-Ray Crystallography; Meth Meas Biophys Chem; Neural Mech Health & Disease; Neurobiol Learning & Memory; Pathways Human Health & Disease; Practical Bio Comput; Theory of Molecular Methods

Base Lab Requirement

Click Base Lab Requirements for all Biology majors for additional lists.

Other Departmental Requirements: (48-75 credits)

Chemistry (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*
 - **ORGANIC CHEMISTRY**
 - CHM 25500 - Organic Chemistry ♦
 - CHM 25501 - Organic Chemistry Laboratory
 - CHM 25600 - Organic Chemistry ♦
 - CHM 25601 - Organic Chemistry Laboratory
- * Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and CHM 33901.

Physics (8 credits)

Choose one sequence.

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Calculus (6-10 credits)

Choose one Calculus I course and one Calculus II course.

- MA 16010 - Applied Calculus I
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16500 - Analytic Geometry And Calculus I
- MA 16020 - Applied Calculus II
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^{^*} (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (4-33 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)

- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click here.

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments -see above for specific titles
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- BCHM 56100 - General Biochemistry I or
- CHM 33900 - Biochemistry: A Molecular Approach or
- CHM 43300 - Biochemistry
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-16 Credits

Fall 3rd Year

Intermediate Biology Selective

- BIOL 36700 - Principles Of Development or
- BIOL 41500 - Introduction To Molecular Biology or
- BIOL 42000 - Eukaryotic Cell Biology
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 3rd Year

CMBD Selective I

- BIOL 36700 - Principles Of Development BIOL 36701 - Principles Of Development Labor
- BIOL 41500 - Introduction To Molecular Biology or
- BIOL 42000 - Eukaryotic Cell Biology or
- BIOL 48100 - Eukaryotic Genetics
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory or
- PHYS 27200 - Electric And Magnetic Interactions
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-17 Credits

Fall 4th Year

- STAT 50300 - Statistical Methods For Biology
- *CMBD Selective I*
- BIOL 36700 - Principles Of Development BIOL 36701 - Principles Of Development Labor
- BIOL 41500 - Introduction To Molecular Biology or
- BIOL 42000 - Eukaryotic Cell Biology or
- BIOL 48100 - Eukaryotic Genetics
- Base Lab Requirement - Credit Hours: 2.00-4.00
- Great Issues In Science - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

14-16 Credits

Spring 4th Year

CMBD Selective II

- BIOL 51600 - Molecular Biology Of Cancer or
- BIOL 55001 - Eukaryotic Molecular Biology or
- BIOL 59500 - Special Assignments -see above for specific titles
- Biology Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Team-Building & Collaboration - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Chemical Biology & Biochemistry, BS

About the Program

Biochemistry investigates the chemical and molecular foundations of life processes. A student may study the transfer of genetic information into biological structures, the conversion of nutrients into cell constituents and their utilization as sources of energy, the storage of memory, and the chemical nature of neural processes. Laboratory techniques include electrophoresis, chromatography, Western blotting, protein sequence analysis, and peptide mapping. Understanding the development and application of enzymatic assays is fundamental to this field of study. This rigorous curriculum is excellent preparation for a number of careers in both academic and industrial research, including cancer and AIDS research, medicine, veterinary medicine, dentistry, structural biology, genetics, and medicinal chemistry and drug development.

Biochemistry Website

Chemical Biology & Biochemistry Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (64 credits)

A minimum 2.0 average in all biology and chemistry courses is required for this major.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior (satisfies Science, Technology & Society Selective for core) ♦
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr 1 Bio Lab Phges Flds-Honors

Chemistry Core (13 credits)

General Chemistry (5 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦

Organic Chemistry (8 credits)

- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry
- CHM 25601 - Organic Chemistry Laboratory

Upper Level Biology and Chemistry Coursework (32 credits)

- BIOL 41500 - Introduction To Molecular Biology
- BIOL 42000 - Eukaryotic Cell Biology
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 33901 - Biochemistry Laboratory
- CHM 37200 - Physical Chemistry
- CHM 49000 - Selected Topics In Chemistry For Upper-Division Students - Bioinorganic Chemistry (3 credits)
Credit Hours: 3.00
- CHM 59900 - Special Assignments -Bioanalytical Chemistry (3 credits)

Choose one. (2 credits)

- BIOL 49400 - Biology Research
- BIOL 49900 - Biology Honors Thesis Research
- CHM 49900 - Special Assignments

Choose one. (4 credits)

Take twice, 2 credits each time. (fulfills Base Lab Requirement)

- BIOL 49500 - Special Assignments -CBB Research Capstone
- CHM 49000 - Selected Topics In Chemistry For Upper-Division Students -CBB Research Capstone

Choose one. (3 credits)

- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 59500 - Special Assignments -CryoEM 3D Reconstruction
- BIOL-59500 - Special Assignments - Intro to X-Ray Crystallography

Choose one. (3 credits)

- BIOL 59500 - Special Assignments -Methods & Measurements in Biophysical Chemistry
- CHM 56000 - Organic Spectroscopic Analysis

Other Departmental Requirements (37-59 credits)

Physics Selectives (8 credits)

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II

Calculus Selectives (8-10 credits)

Choose one sequence.

- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I
- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-41 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (0-19 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Elective - Credit Hours: 1.00 (BIOL 11500 or CHM 19400 strongly recommended)

15-17 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-Honors
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-17 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function

- CHM 25600 - Organic Chemistry
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 33901 - Biochemistry Laboratory
- CS 15900 - C Programming or
- CS 17700 - Programming With Multimedia Objects or
- CS 18000 - Problem Solving And Object-Oriented Programming
- Science Core Selection - Credit Hours: 3.00-4.00

17-18 Credits

Fall 3rd Year

- BIOL 42000 - Eukaryotic Cell Biology
- CHM 59900 - Special Assignments -Bioanalytical Chemistry (3 credits)
- PHYS 23300 - Physics For Life Sciences I
- BIOL 49400 - Biology Research or
- BIOL 49900 - Biology Honors Thesis Research or
- CHM 49900 - Special Assignments
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 3rd Year

- BIOL 41500 - Introduction To Molecular Biology
- CHM 37200 - Physical Chemistry
- PHYS 23400 - Physics For Life Sciences II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 4th Year

- CHM 49000 - Selected Topics In Chemistry For Upper-Division Students -Bioinorganic Chemistry (3 credits)
- BIOL 49500 - Special Assignments -CBB Research Capstone (2 credits) or
- CHM-49000 Selected Topics In Chemistry For Upper-Division Students-CBB Research Capstone (2 credits)
- BIOL 59500 - Special Assignments - Methods & Measurements in Biophysical Chemistry (3 credits) or
- CHM 56000 - Organic Spectroscopic Analysis
- Science Core Selection - Credit hours: 3.00 - 4.00
- Science Core Selection - Credit hours: 3.00 - 4.00

14 Credits

Spring 4th Year

- STAT 50300 - Statistical Methods For Biology
- BIOL 49500 - Special Assignments -CBB Research Capstone (2 credits) or
- CHM 49000 - Selected Topics In Chemistry For Upper-Division Students -CBB Research Capstone (2 credits)
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action or
- BIOL 59500 - Special Assignments
-CryoEM 3D Reconstuction (3 credits) or
-Intro to X-Ray Crystallography (3 credits)
- Science Core Selection - Credit hours: 3.00 - 4.00
- Elective - Credit hours: 3.00

14-15 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Ecology, Evolution, and Environmental Biology, BS

About the Program

This major investigates how organisms interact with their physical environment and other organisms, from an evolutionary perspective. Ecologists' work includes research and/or teaching involving population genetics and evolution, adaptive strategies for survival, the nature of populations, and community ecology. Ecologists also offer technical services in connection with environmental impact decisions and regional planning, and environmental education at various levels as teacher, naturalist, or journalist. Common career paths for undergraduate students include graduate study leading to academic positions (research and teaching in small colleges and major universities), technical positions in industry (mostly dealing with environmental assessment), and employment in state and federal environmental agencies.

Ecology, Evolution, and Environmental Sciences Website

Ecology, Evolution, and Environmental Biology Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (37-43 credits)

*A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (satisfies Science, Technology & Society Selective for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr 1 Bio Lab Phges Flds-Honors

Required Upper Level Biology Coursework

- BIOL 58000 - Evolution
- BIOL 59500 - Special Assignments - (Ecology - 3 credits, Laboratory in Ecology - 1 credit)
- CHM 33901 - Biochemistry Laboratory

Ecology Selective

Select one: May not overlap with Biology Selective

- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59100 - Field Ecology
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments -Disease Ecology Credit Hours: 3.00

Intermediate Biology Selective (3-4 credits)

Choose one of the options below.

- BIOL 32800 - Principles Of Physiology
- BIOL 39500 - Special Assignments -Macromolecules
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology
- BIOL 36700 - Principles Of Development and
- BIOL 36701 - Principles Of Development Lab

Biology Selective

Select 1 course.

- AGE 52500 - Environmental Policy Analysis
- ANTH 53500 - Foundations Of Biological Anthropology
- ANTH 53600 - Primate Ecology
- BIOL 39500 - Special Assignments
Title: Exp Dsgn&Quant Analys I-Honors
- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49500 - Special Assignments
Title Options: Data Science: Good Versus Bad Data; Genomics & Infectious Diseases
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59100 - Field Ecology
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments
Title: Disease Ecology
- BTNY 30200 - Plant Ecology
- BTNY 30500 - Plant Evolution and Taxonomy
- BTNY 56100 - Survey Of Mathematical Biology
- CE 35000 - Introduction To Environmental And Ecological Engineering
- CE 35200 - Biological Principles Of Environmental Engineering
- FNR 44700 - Vertebrate Population Dynamics
- FNR 48800 - Global Environmental Issues
- POL 52300 - Environmental Politics And Public Policy

Base Lab Requirement

See Base Lab Requirements for all Biology majors for additional course listings.

Other Departmental /Program Course Requirements (51-79 credits)

Chemistry (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory

Chemistry Selective (3-4 credits)

Select one of the following options:

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

*Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and 33901.

Physics (8 credits)

Choose one sequence.

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Calculus (6-10 credits)

Choose one sequence.

- MA 16010 - Applied Calculus I
- MA 16020 - Applied Calculus II
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I
- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (0-32 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments -see title options above.
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (BIOL 11500 strongly recommended)

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-16 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- Chemistry Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (BIOL 29300 strongly recommended)
- Elective - Credit Hours: 1.00

16-18 Credits

Fall 3rd Year

- BIOL 59500 - Special Assignments - (Ecology - 3 credits, Laboratory in Ecology - 1 credit)
- STAT 50300 - Statistical Methods For Biology
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

17 Credits

Spring 3rd Year

- BIOL 58210 - Ecological Statistics or
- BIOL 58705 - Animal Communication or
- BIOL 59100 - Field Ecology or
- BIOL 59200 - The Evolution Of Behavior or
- BIOL 59500 - Special Assignments -Disease Ecology
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

14-16 Credits

Fall 4th Year

- Intermediate Biology Selective - Credit Hours: 3.00 - 4.00
- Base Lab Requirements for all Biology majors - Credit Hours: 2.00 - 4.00
- Biology Selective - Credit Hours: 2.00 - 4.00
- Great Issues Selective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16-21 Credits

Spring 4th Year

- BIOL 58000 - Evolution
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

14 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Genetics, BS

About the Program

Genetics is the science of information transfer from one generation to another. We learn the laws of inheritance in all creatures big and small, how they evolve and how they change. On the molecular level we learn about DNA and RNA, on the cellular level we discover what makes a cell cancerous, and on an organismal level we examine the reproductive habits of various organisms. Crucial principles include the structure, function, and transmission of genes. Laboratory techniques explore genetic engineering from the "inside." Genetics is crucial to all of biology, hence a genetics major has great flexibility. This is excellent preparation for advanced study in biological sciences, law, genetic counseling, and many health-related professions.

Genetic Biology Website

Genetics Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science

- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Major Courses (38-41 credits)

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior & (satisfies Science, Technology & Society for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-Honors

Intermediate Biology Selective (3-4 credits)

Choose one of the following options.

- BIOL 32800 - Principles Of Physiology
- BIOL 36700 - Principles Of Development
- BIOL 39500 - Special Assignments -Macromolecules
- BIOL 41500 - Introduction To Molecular Biology

- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology

Upper Level Biology Coursework (8 credits)

- BIOL 44100 - Biology Senior Seminar In Genetics
 - BIOL 48100 - Eukaryotic Genetics
 - CHM 33901 - Biochemistry Laboratory *
 - BCHM 56100 - General Biochemistry I or
 - CHM 33900 - Biochemistry: A Molecular Approach * or
 - CHM 43300 - Biochemistry
- * Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and CHM 33901.

Biology Selectives (6 credits)

Area 1 - Choose one:

- AGRY 53000 - Advanced Plant Genetics
 - BIOL 43800 - General Microbiology
 - BIOL 47800 - Introduction to Bioinformatics
 - BIOL 49500 - Special Assignments
- Title Options: Genomics & Infectious Diseases; RNA World: CRISPR & Coronavirus*

Area 2 - Choose one:

- BIOL 51600 - Molecular Biology Of Cancer
 - BIOL 54100 - Molecular Genetics Of Bacteria
 - BIOL 55001 - Eukaryotic Molecular Biology
 - BIOL 58000 - Evolution
 - BIOL 59500 - Special Assignments
- Title Options: Genetics Omics Host Microbe; Pathways Human Health & Disease; Theory Of Molecular Methods*

Base Lab Requirement (2-4 credits)

Click Base Lab Requirements for all Biology majors for additional lists.

Other Departmental Requirements: (48-75 credits)

Chemistry (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus *
ORGANIC CHEMISTRY
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry ♦

- CHM 25601 - Organic Chemistry Laboratory
* Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and 33901.

Physics (8 credits)

Choose one sequence.

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Calculus (6-10 credits)

Choose one sequence.

- MA 16010 - Applied Calculus I
- MA 16020 - Applied Calculus II
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I
- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (4-34 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments -see above for titles.
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- BCHM 56100 - General Biochemistry I or
- CHM 33900 - Biochemistry: A Molecular Approach * or
- CHM 43300 - Biochemistry
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-16 Credits

Fall 3rd Year

- AGRY 53000 - Advanced Plant Genetics or
- BIOL 43800 - General Microbiology or
- BIOL 47800 - Introduction to Bioinformatics or
- BIOL 49500 - Special Assignments -Genomics & Infectious Diseases
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 3rd Year

- BIOL 48100 - Eukaryotic Genetics
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

14-15 Credits

Fall 4th Year

- BIOL 44100 - Biology Senior Seminar In Genetics
- STAT 50300 - Statistical Methods For Biology
- Intermediate Biology Selective - Credit Hours: 3.00
- Great Issue Course Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- BIOL 51600 - Molecular Biology Of Cancer or
- BIOL 54100 - Molecular Genetics Of Bacteria or
- BIOL 55001 - Eukaryotic Molecular Biology or
- BIOL 58000 - Evolution or
- BIOL 59500 - Special Assignments -see above for titles.
- Base Lab Requirement - Credit Hours: 2.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

14-16 Credits

Notes

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Health and Disease, BS

About the Program

Health and disease is a biology program of study with an emphasis on disease-related upper-level biology courses and general education electives that relate to health. The major provides a rigorous curriculum for students interested in health careers, thus giving the student many career options after graduation.

Health and Disease Website

Health and Disease Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science

- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Major Courses (42 credits)

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (satisfies Science, Technology & Society Selective for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr 1 Bio Lab Phges Flds-Honors

Required Upper Level Biology Coursework (14 credits)

- BIOL 39500 - Human Anatomy & Physiology I
- BIOL 39500 - Human Anatomy & Physiology II
- BIOL 43800 - General Microbiology (overlaps with Intermediate requirement)
- BIOL 43900 - Laboratory In General Microbiology (overlaps with Base Lab requirement)
- CHM 33901 - Biochemistry Laboratory

Intermediate Biology Selective

- BIOL 43800 - General Microbiology
(overlaps with Upper Level Requirement)

Health And Disease Selective (3 credits)

Choose one; may not overlap with Biology Selectives.

- BIOL 41600 - Viruses And Viral Disease
- BIOL 53700 - Immunobiology

Biology Selectives (6 credits)

Choose 6 credits.

- BCHM 43400 - Medical Topics In Biochemistry
- BIOL 32800 - Principles Of Physiology
- BIOL 36700 - Principles Of Development
- BIOL 39500 - Special Assignments
Title Options: Experimental Design & Quantitative Analysis-Honors; Macromolecules
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 48100 - Eukaryotic Genetics
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49400 - Biology Research -Maximum 3 credits of research (BIOL 49400 or BIOL 49900)
- BIOL 49500 - Special Assignments
Title Options: Data Science: Good Versus Bad Data; Energy Transduction in Society; Genomics & Infectious Diseases; RNA World: CRISPR & Coronavirus
- BIOL 49900 - Biology Honors Thesis Research -Maximum 3 credits of research (BIOL 49400 or BIOL 49900)
- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 51700 - Molecular Biology: Proteins
- BIOL 52900 - Bacterial Physiology
- BIOL 53300 - Medical Microbiology
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 53700 - Immunobiology
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54200 - Modular Upper-Division Laboratory Course
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 56200 - Neural Systems
- BIOL 56310 - Protein Bioinformatics
- BIOL 58000 - Evolution
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication

- BIOL 59100 - Field Ecology
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments

Title Options: Cell Biology Of Plants; CryoEM 3D Reconstruction; Disease Ecology; Ecology; Genomics & Omics of Host-Microbe Interactions; Intro to X-Ray Crystallography; Meth Meas Biophys Chem; Neural Mech Health & Disease; Neurobiol Learning & Memory; Pathways Human Health & Disease; Practical Bio Comput; Theory of Molecular Methods

- HORT 30100 - Plant Physiology

Base Lab Requirement

Click Base Lab Requirements for all Biology majors for additional lists.

(Overlaps with Upper Level Requirement.)

Other Departmental Requirements: (51-79 credits)

Chemistry (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*
- **ORGANIC CHEMISTRY**
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory

* Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and CHM 33901.

Chemistry Selective (3-4 credits)

Select one of the following options:

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and 33901.

Physics (8 credits)

Choose one sequence.

- PHYS 23300 - Physics For Life Sciences I
- PHYS 23400 - Physics For Life Sciences II
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Calculus (6-10 credits)

Choose one sequence.

- MA 16010 - Applied Calculus I
- MA 16020 - Applied Calculus II
- MA 16100 - Plane Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I
- MA 16600 - Analytic Geometry And Calculus II

Pre-Professional Selective (3 credits)

Choose one. May not overlap with General Education or Culture/Diversity requirements.

- ANTH 21200 - Culture, Food And Health
- ANTH 34000 - Global Perspectives On Health
- HIST 36305 - The History Of Medicine And Public Health
- HIST 47005 - Women And Health In America
- PHIL 27000 - Biomedical Ethics
- PHIL 28000 - Ethics And Animals
- PUBH 40000 - Human Diseases And Disorders
- PUBH 40500 - Principles Of Epidemiology
- SOC 27500 - Sociology Of Aging And The Life Course
- SOC 35200 - Drugs, Culture, And Society
- SOC 37400 - Medical Sociology
- SOC 46100 - Health And Social Behavior

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (0-27 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments (see above for titles)
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- Chemistry Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-17 Credits

Fall 3rd Year

- BIOL 39500 Human Anat Physio I - Credit Hours 4.00
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Biology Selective - Credit Hours: 2.00 - 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

- Elective - Credit Hours: 2.00

16-17 Credits

Spring 3rd Year

- BIOL 39500 Human Anat Physio II Credit Hours: 4.00
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00

17-18 Credits

Fall 4th Year

- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- STAT 50300 - Statistical Methods For Biology
- Great Issues Course Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

17 Credits

Spring 4th Year

- BIOL 41600 - Viruses And Viral Disease or
- BIOL 53700 - Immunobiology
- Biology Selective 500 Level - Credit Hours: 2.00 - 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Pre-Professional Selective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Microbiology Honors, BS

About the Program

Microbiology includes the study of viruses, bacteria, and fungi. A student can expect to study topics such as microbial growth, nutrition, metabolism, pathogenesis, morphogenesis, and production of antibiotics. Career opportunities are found in public health, medical laboratories, quality assurance, environmental toxicology, and related areas. A microbiology major provides excellent preparation for advanced study (or direct employment) in biological sciences, education, and many health-related professions.

Microbiology Website

Microbiology Honors Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)

- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses (60-66 credits)

A 3.0 or higher graduation index is required to graduate in the Microbiology Honors Curriculum.

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (satisfies Science, Technology & Society Selective for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-Honors

Upper Level Biology Coursework (21 credits)

Required Courses (12 credits)

- CHM 33901 - Biochemistry Laboratory
- BIOL 41600 - Viruses And Viral Disease
- BIOL 43800 - General Microbiology (overlaps with Intermediate Biology requirement)
- BIOL 43900 - Laboratory In General Microbiology (overlaps with Base Lab requirement)

- BIOL 52900 - Bacterial Physiology

Microbiology Selective I (3 credits)

Choose one. May not overlap Microbiology Selective II.

- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 59500 - Special Assignments - Genomics & Omics of Host-Microbe Interactions

Microbiology Selective II (3 credits)

Choose one. May not overlap Microbiology Selective I.

- BIOL 39500 - Special Assignments
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 53300 - Medical Microbiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 59500 - Special Assignments - Genetics Omics Host Microbe
- ABE 59100 - Special Topics - Princ Of System/Synthetic Biol
- FS 59100 - Special Topics - Microbial Genomes Metabolism

Biochemistry Selective (3 credits)

Choose one.

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

Intermediate Biology Selective

- BIOL 43800 - General Microbiology (overlaps with Upper Level requirement)

Base Lab Requirement

Select Base Lab Requirements for all Biology majors for additional lists.

(overlaps with Upper Level Requirement)

Honors Curriculum (12-18 credits)

The following MUST be completed:

- MA 26100 - Multivariate Calculus
- **Microbiology Honors Selective - at least TWO of the following four choices must be completed:**
- PHYS 17200 - Modern Mechanics and

- PHYS 27200 - Electric And Magnetic Interactions
- CHM 32100 - Analytical Chemistry I
- CHM 37200 - Physical Chemistry
OR
- CHM 37300 - Physical Chemistry and
- CHM 37400 - Physical Chemistry
- MA 26200 - Linear Algebra And Differential Equations

Other Departmental Requirements: (34-67 credits)

Chemistry Selectives (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*
 - CHM 25500 - Organic Chemistry
 - CHM 25501 - Organic Chemistry Laboratory
 - CHM 25600 - Organic Chemistry
 - CHM 25601 - Organic Chemistry Laboratory
- * Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and CHM 33901.

Physics Selectives (0-8 credits)

Choose one Physics I option and one Physics II option.

(PHYS 17200 & PHYS 27200 may overlap Honors Curriculum.)

- PHYS 17200 - Modern Mechanics (satisfies Science for core)
- PHYS 23300 - Physics For Life Sciences I (satisfies Science for core)
- PHYS 23400 - Physics For Life Sciences II
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- PHYS 27200 - Electric And Magnetic Interactions

Calculus Selectives (8-10 credits)

Choose one Calculus I course and one Calculus II course.

- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core) or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II (satisfies Quantitative Reasoning for core) or
- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (0-46 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments (see titles above)
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00

16 - 17 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- CHM 25600 - Organic Chemistry
- CHM 25601 - Organic Chemistry Laboratory
- MA 26100 - Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00

16 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- BCHM 56100 - General Biochemistry I or
- CHM 33900 - Biochemistry: A Molecular Approach or
- CHM 43300 - Biochemistry
- Science Core Selection - Credit Hours: 3.00 - 4.00

14 Credits

Fall 3rd Year

- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- COM 21700 - Science Writing And Presentation
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 3rd Year

- BIOL 41600 - Viruses And Viral Disease
- CS 17700 - Programming With Multimedia Objects or
- CS 15900 - C Programming or
- CS 18000 - Problem Solving And Object-Oriented Programming
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory or
- PHYS 27200 - Electric And Magnetic Interactions
- Science Core Selection - Credit Hours: 3.00 - 4.00

14-15 Credits

Fall 4th Year

- BIOL 54100 - Molecular Genetics Of Bacteria or
- BIOL 59500 - Special Assignments - Genomics & Omics of Host-Microbe Interactions
- Microbiology Honors Selective - Credit Hours: 4.00
- Microbiology Selective II - Credit Hours: 3.00
- Great Issue Course Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- BIOL 52900 - Bacterial Physiology
- STAT 50300 - Statistical Methods For Biology
- Microbiology Honors Selective - Credit Hours: 4.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Notes

- 3.0 Graduation GPA required for Microbiology Honors major.
- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Microbiology, BS

About the Program

Microbiology includes the study of viruses, bacteria, and fungi. A student can expect to study topics such as microbial growth, nutrition, metabolism, pathogenesis, morphogenesis, and production of antibiotics. Career opportunities are found in public health, medical laboratories, quality assurance, environmental toxicology, and related areas. A microbiology major provides excellent preparation for advanced study (or direct employment) in biological sciences, education, and many health-related professions.

Microbiology Website

Microbiology Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (40 credits)

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (satisfies Science, Technology & Society Selective for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-Honors

Upper Level Biology Coursework (21 credits)

Required Courses (12 credits)

- CHM 33901 - Biochemistry Laboratory

- BIOL 41600 - Viruses And Viral Disease
- BIOL 43800 - General Microbiology (overlaps with Intermediate Biology Requirement)
- BIOL 43900 - Laboratory In General Microbiology (overlaps with Base Lab Requirement)
- BIOL 52900 - Bacterial Physiology

Microbiology Selective I (3 credits)

Choose one. May not overlap Microbiology Selective II.

- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 59500 - Special Assignments - Genomics & Omics of Host-Microbe Interactions

Microbiology Selective II (3 credits)

Choose one. May not overlap with Microbiology Selective I.

- BIOL 39500 - Special Assignments
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 53300 - Medical Microbiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology
- BIOL 59500 - Special Assignments - Genomics & Omics of Host-Microbe Interactions
- ABE 59100 - Special Topics - Princ Of System/Synthetic Biol
- FS 59100 - Special Topics - Microbial Genomes Metabolism

Biochemistry Selective (3 credits)

Choose one.

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

Intermediate Biology Selective

- BIOL 43800 - General Microbiology (overlaps with Upper Level requirement)

Base Lab Requirement

Select Base Lab Requirements for all Biology majors for additional lists.

(overlaps with Upper Level requirement)

Other Departmental (48-75 credits)

Chemistry Selectives (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory

* Students who take CHM 12901 for General Chemistry must complete both CHM 33900 and CHM 33901.

Physics Selectives (8 credits)

Choose one sequence.

- PHYS 23300 - Physics For Life Sciences I (satisfies Science Selective for core)
- PHYS 23400 - Physics For Life Sciences II
- PHYS 17200 - Modern Mechanics (satisfies Science Selective for core)
- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 17200 - Modern Mechanics (satisfies Science for core)
- PHYS 24100 - Electricity And Optics
- PHYS 25200 - Electricity And Optics Laboratory

Calculus Selectives (6-10 credits)

Choose one sequence.

- MA 16010 - Applied Calculus I (satisfies Quantitative Reasoning for core)
- MA 16020 - Applied Calculus II
- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core)
- MA 16200 - Plane Analytic Geometry And Calculus II
- MA 16500 - Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core)
- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (5-32 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments (see titles above)
- MA 16010 - Applied Calculus I or

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- BCHM 56100 - General Biochemistry I or
- CHM 33900 - Biochemistry: A Molecular Approach or
- CHM 43300 - Biochemistry
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-16 Credits

Fall 3rd Year

- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 3rd Year

- BIOL 41600 - Viruses And Viral Disease
- BIOL 52900 - Bacterial Physiology
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

14 Credits

Fall 4th Year

- BIOL 54100 - Molecular Genetics Of Bacteria or
- BIOL 59500 - Special Assignments - Genetics & Omics of Host-Microbe Interactions
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Great Issues In Science - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 4th Year

- STAT 50300 - Statistical Methods For Biology
- Microbiology Selective II - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Neurobiology and Physiology, BS

About the Program

Physiology is the study of the functions of living organisms and of the organ and tissue systems of which they are composed. The goal of physiology is to understand, in terms of physical and chemical principles, the mechanisms that operate in living organisms from the subcellular level to the level of the whole animal, with an emphasis on how these mechanisms are integrated to produce a viable organism.

Neurobiology is the study of the structure, function, and development of the nervous system, and originated, in part, as a subdiscipline of physiology. In recent years, neurobiology has become one of the most rapidly changing and exciting areas of biology. A neurobiology and physiology major is excellent preparation for careers in education, research, industry, medicine, veterinary medicine, and other professions.

Neurobiology and Physiology Website

Neurobiology and Physiology Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (38-41 credits)

A minimum 2.0 average in all biology courses is required for this major.

Each student must take at least one 500-level BIOL course other than BIOL 54200 or a BIOL 59500 lab.

Biology Core (19 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦ (satisfies Science, Technology & Society Selective for core)
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-Honors

Upper Level Biology Coursework (10-11 Credits)

- CHM 33901 - Biochemistry Laboratory

Neurobiology & Physiology Selectives - Choose 2: (6 credits)

- BIOL 43600 - Neurobiology
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 56200 - Neural Systems
- BIOL 59500 - Special Assignments
 - Neural Mech Health & Disease
 - Neurobiol Learning & Memory

Chemistry Selective - Choose one: (3-4 credits)

(May not overlap with Biology Selective.)

- BCHM 56100 - General Biochemistry I
- CHM 33900 - Biochemistry: A Molecular Approach
- CHM 43300 - Biochemistry

Intermediate Biology Selective (4 credits)

- BIOL 32800 - Principles Of Physiology

Biology Selective (3 credits)

Choose 3 credits.

- BCHM 43400 - Medical Topics In Biochemistry
- BIOL 36700 - Principles Of Development
- BIOL 39500 - Special Assignments
Title: Exp Dsgn & Quant Analys I-Honors
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology
- BIOL 43900 - Laboratory In General Microbiology
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 48100 - Eukaryotic Genetics
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49500 - Special Assignments
Title Options: Data Science: Good Versus Bad Data; Energy Transduction in Society; Genomics & Infectious Diseases; RNA World: CRISPR & Coronavirus
- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 51700 - Molecular Biology: Proteins
- BIOL 52900 - Bacterial Physiology
- BIOL 53300 - Medical Microbiology
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 53700 - Immunobiology
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 54100 - Molecular Genetics Of Bacteria
- BIOL 54900 - Microbial Ecology
- BIOL 55001 - Eukaryotic Molecular Biology

- BIOL 56200 - Neural Systems
- BIOL 56310 - Protein Bioinformatics
- BIOL 58000 - Evolution
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59100 - Field Ecology
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments

Title Options: Cell Biology Of Plants; CryoEM 3D Reconstruction; Disease Ecology; Ecology; Genomics & Omics of Host-Microbe Interactions; Intro to X-Ray Crystallography; Meth Meas Biophys Chem; Neural Mech Health & Disease; Neurobiol Learning & Memory; Pathways Human Health & Disease; Practical Bio Comput; Theory of Molecular Methods

Base Lab Requirement (2-4 credits)

Select Base Lab Requirements for all Biology majors for additional lists.

Other Departmental Requirements: (48-75 credits)

Chemistry Selectives (13 credits)

- CHM 12901 - General Chemistry With A Biological Focus ♦*
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory

* Students who begin with CHM 12901 must complete both CHM 33900 and CHM 33901.

Physics Selectives (8 credits)

Choose one Physics I and one Physics II course.

- PHYS 23300 - Physics For Life Sciences I (satisfies Science for core) or
- PHYS 17200 - Modern Mechanics (satisfies Science for core)
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions

Calculus Selectives (6-10 credits)

Choose one Calculus I course and one Calculus II course.

- MA 16010 - Applied Calculus I (satisfies Quantitative Reasoning for core) or
- MA 16100 - Plane Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core) or
- MA 16500 - Analytic Geometry And Calculus I (satisfies Quantitative Reasoning for core)
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or

- MA 16600 - Analytic Geometry And Calculus II

College of Science Core Requirements (21-44 credits)

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with required major coursework.

Statistics (3 credits)

- STAT 50300 - Statistical Methods For Biology

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Electives (4-34 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior ♦
- CHM 12901 - General Chemistry With A Biological Focus ♦
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments (see above for titles)
- MA 16010 - Applied Calculus I or
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms ♦
- CHM 25500 - Organic Chemistry ♦
- CHM 25501 - Organic Chemistry Laboratory
- MA 16020 - Applied Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-19 Credits

Fall 2nd Year

- BIOL 23100 - Biology III: Cell Structure And Function ♦
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- COM 21700 - Science Writing And Presentation
- CHM 25600 - Organic Chemistry ♦
- CHM 25601 - Organic Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00 - 4.00

15 Credits

Spring 2nd Year

- BIOL 24100 - Biology IV: Genetics And Molecular Biology ♦
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 28600 - Introduction To Ecology And Evolution
- CHM 33901 - Biochemistry Laboratory
- BCHM 56100 - General Biochemistry I or
- CHM 33900 - Biochemistry: A Molecular Approach or
- CHM 43300 - Biochemistry
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15-17 Credits

Fall 3rd Year

- PHYS 17200 - Modern Mechanics or
- PHYS 23300 - Physics For Life Sciences I
- Neurobiology & Physiology Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 3rd Year

- BIOL 32800 - Principles Of Physiology
- STAT 50300 - Statistical Methods For Biology
- PHYS 23400 - Physics For Life Sciences II or
- PHYS 27200 - Electric And Magnetic Interactions
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

15 Credits

Fall 4th Year

- Biology Selective - Credit Hours: 3.00
- Base Lab Requirement - Credit Hours: 2.00 - 4.00
- Great Issues Course Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

14-16 Credits

Spring 4th Year

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Neurobiology & Physiology Selective 500 Level - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Note

- 2.0 Graduation GPA required for Bachelor of Science degree.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Minor

Biological Sciences Minor

Requirements for Minor (16-20 credits)

Part I Courses (7-8 credits)

- BIOL 12100 - Biology I: Diversity, Ecology, And Behavior
- BIOL 13100 - Biology II: Development, Structure, And Function Of Organisms
AND
- ABE 22600 - Biotechnology Laboratory I or
- BIOL 13500 - First Year Biology Laboratory or
- BIOL 19500 - Special Assignments
 - Diet, Dis & Immune Sys-Honors
 - Yr I Bio Lab Disea Ecol-Honors
 - Yr I Bio Lab Phges Flds-HonorsOR
- BIOL 11000 - Fundamentals Of Biology I and
- BIOL 11100 - Fundamentals Of Biology II (AP credit for BIOL 11000-BIOL 11100 is acceptable)

Part II Courses (6 credits)

- BIOL 23100 - Biology III: Cell Structure And Function or
- BIOL 23000 - Biology Of The Living Cell
- BIOL 24100 - Biology IV: Genetics And Molecular Biology or
- AGRY 32000 - Genetics

Part III Courses (2-4 credits)

- BIOL 28600 - Introduction To Ecology And Evolution *
- BIOL 32800 - Principles Of Physiology *
- BIOL 36700 - Principles Of Development *
- BIOL 39500 - Special Assignments
 - Macromolecules*
 - Exp Dsgn&Quant Analys I-Honors
- BIOL 41500 - Introduction To Molecular Biology
- BIOL 41600 - Viruses And Viral Disease
- BIOL 42000 - Eukaryotic Cell Biology
- BIOL 43600 - Neurobiology
- BIOL 43800 - General Microbiology
- BIOL 44600 - Molecular Bacterial Pathogenesis
- BIOL 47800 - Introduction to Bioinformatics
- BIOL 48100 - Eukaryotic Genetics
- BIOL 48300 - Great Issues: Environmental And Conservation Biology
- BIOL 49500 - Special Assignments
 - Data Science: Good Versus Bad Data
- BIOL 51600 - Molecular Biology Of Cancer
- BIOL 51700 - Molecular Biology: Proteins
- BIOL 53300 - Medical Microbiology
- BIOL 53601 - Biological And Structural Aspects Of Drug Design And Action
- BIOL 53700 - Immunobiology
- BIOL 53800 - Molecular, Cellular, And Developmental Neurobiology
- BIOL 56200 - Neural Systems
- BIOL 56310 - Protein Bioinformatics
- BIOL 58000 - Evolution
- BIOL 58210 - Ecological Statistics
- BIOL 58705 - Animal Communication
- BIOL 59200 - The Evolution Of Behavior
- BIOL 59500 - Special Assignments
 - Disease Ecology
 - Exp Dsgn&Quant Analys I-Honors
 - Meth Meas Biophys Chem
 - Neurobiol Learning & Memory
 - Pathways Human Health & Disease
 - Practical Bio Comput

Part IV Laboratory Course (1-4 credits)

- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology
- BIOL 32800 - Principles Of Physiology *
- BIOL 39500 - Special Assignments - Macromolecules* Credit Hours: 3.00
- AGRY 32100 - Genetics Laboratory

Notes

- All classes for this minor must be taken at Purdue University.
- At least one-half of these courses must be taken at the West Lafayette campus.
- A 2.0 or higher average is required in courses used to complete the minor.
- * BIOL 32800 or BIOL 39500 alone will meet the requirements for Parts III and IV.

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Department of Chemistry

Overview

The Department of Chemistry is located centrally on the Purdue campus and is housed in the *Richard B. Wetherill Laboratories(WTHR)* and the *Herbert C. Brown Laboratory of Chemistry(BRWN)*. Students, faculty, and staff have access to world class facilities both for teaching and research.

Our Mission | Our Vision

The Department is home to:

- 52 faculty members
- 350 undergraduate students
- 310 graduate students
- 90 support personnel

In the 2013 Academic Ranking of World Universities (Shanghai Rankings), our departments ranked 20th world-wide and 13th nationally.

The Department of Chemistry offers a Bachelor of Science in Chemistry (ACS accredited), a Bachelor of Science and a minor in Chemistry. The department also offers an Honors program and the opportunity to participate in Cooperative Education Program.

Honors Program

The Department of Chemistry has an honors program for superior students. Participation can begin during the sophomore year, and a student will be assigned to advanced sections in chemistry courses. During the junior and senior years, a student engages in undergraduate research, participates in research seminars and completes honor courses. The undergraduate research experience (CHM 49900 or equivalent) is to be a minimum of six credits. In addition, the student must write an honor's thesis based on the CHM 49900 work. The faculty advisor will read the thesis and the student will give a presentation of the research.

Admission to the chemistry honors program must be made by the end of the junior year. The honors student is expected to achieve and maintain a scholastic graduation index of at least 3.40. Students fulfilling requirements of the chemistry honors program will be graduated "with honors in chemistry". The honors program has been approved by the Royal Society of Chemistry.

Cooperative Education Program

The Department of Chemistry participates in the Cooperative Education Program. This program requires five years and involves the option of 3 or 5 work period sessions, either semester or summer modules, with a cooperating company in the chemical industry. As a student gains experience, she or he is given increasingly responsible industrial assignments and receives more

compensation. A student can enter the program meeting the following requirements: has completed two semesters of chemistry and has a chemistry index of 2.80. Information is available from the Coordinator of Cooperative Education in the Department of Chemistry. Check with your advisor for further information.

Department of Chemistry Website

Faculty

Contact Information

Head: Professor Chris Hrycyna

Graduate Admissions: Dr. Stephen Hoffmann, Assistant Head

Undergraduate Information: Dr. Christine Schertz

Webmaster: webmaster@chem.purdue.edu

Mailing address:

Department of Chemistry

560 Oval Drive

West Lafayette, Indiana 47907-2084

Telephone (765) 494-5200 **FAX** (765) 494-0239

Graduate Information

For Graduate Information please see Chemistry Graduate Program Information.

Baccalaureate

Biochemistry (Chemistry), BSCH

About the Program

Biochemists study the chemical basis of life. Some of the major problems include the transfer of genetic information to biological structures, the conversion of nutrients into cell constituents and their utilization as sources of energy, the storage of memory, and the chemical nature of neural processes. Furthermore, biochemists are interested in the chemical details of important processes such as photosynthesis, blood clotting, fertilization, and other functions that may be unique to certain organisms. This program includes six credits of undergraduate research in a wide range of fields, including drug discovery, nano-medicine, protein structure determination, development and application of novel chemical tools to dissect different biological processes.

By concentrating advanced elective credit hours in biochemistry and by taking biology courses, this degree provides an excellent preparation for medical, dental, or veterinary schools. This program would particularly benefit those planning careers in medical research.

Biochemistry Website

Chemistry Department Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (81-86 credits)

Required Major Courses (48-50 credits)

- BIOL 23100 - Biology III: Cell Structure And Function
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- CHM 24100 - Introductory Inorganic Chemistry
- CHM 26505 - Organic Chemistry ♦
- CHM 26605 - Organic Chemistry
- CHM 33901 - Biochemistry Laboratory
- CHM 34200 - Inorganic Chemistry
- CHM 37300 - Physical Chemistry
- CHM 37301 - Physical Chemistry Laboratory
- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- CHM 49900 - Special Assignments - repeated for a total of 5 credits
- CHM 12500 - Introduction To Chemistry I ♦ or
- CHM 11500 - General Chemistry ♦ (satisfies Science for core)
- CHM 12600 - Introduction To Chemistry II or
- CHM 11600 - General Chemistry
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors

Seminars (3 credits)

- CHM 19400 - Freshman Chemistry Orientation
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 49400 - Junior-Senior Chemistry Seminar

Genetics Option (4-5 credits)

Choose one sequence.

- AGRY 32000 - Genetics
- AGRY 32100 - Genetics Laboratory
- BIOL 24100 - Biology IV: Genetics And Molecular Biology
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology

Biochemistry Option (3 credits)

Choose one.

- BCHM 56100 - General Biochemistry I
- CHM 43300 - Biochemistry
- CHM 53300 - Introductory Biochemistry

Biotechnology or Biochemistry II Option (3 credits)

Choose one.

- BCHM 56200 - General Biochemistry II
- CHM 43800 - Introduction To Molecular Biotechnology
- CHM 53800 - Molecular Biotechnology

Required Calculus and Physics Courses (20-22 credits)

- MA 16100 - Plane Analytic Geometry And Calculus I ♦ or
- MA 16500 - Analytic Geometry And Calculus I ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- MA 26100 - Multivariate Calculus
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

Other Departmental /Program Course Requirements (21-57 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming or
- CS 17700 - Programming With Multimedia Objects

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I

- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics

Team-Building and Collaboration

Met with required major coursework.

Electives (0-18 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)

- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CHM 19400 - Freshman Chemistry Orientation
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I ♦ or
- MA 16500 - Analytic Geometry And Calculus I ♦
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00

15-19 Credits

Spring 1st Year

- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00

- Science Core Selection - Credit Hours: 3.00

14-16 Credits

Fall 2nd Year

- CHM 26505 - Organic Chemistry ♦
- MA 26100 - Multivariate Calculus
- PHYS 17200 - Modern Mechanics
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors

14 Credits

Spring 2nd Year

- CHM 26605 - Organic Chemistry
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection- Credit Hours: 3.00
- Science Core Selection- Credit Hours: 3.00

15 Credits

Fall 3rd Year

- BIOL 23100 - Biology III: Cell Structure And Function
- BIOL 23200 - Laboratory In Biology III: Cell Structure And Function
- CHM 49900 - Special Assignments - 2 credits recommended
- CHM 43300 - Biochemistry or
- CHM 53300 - Introductory Biochemistry or
- BCHM 56100 - General Biochemistry I
- CS 17700 - Programming With Multimedia Objects or
- CS 15900 - C Programming
- Science Core Selection- Credit Hours: 3.00

16-17 Credits

Spring 3rd Year

- CHM 24100 - Introductory Inorganic Chemistry
- CHM 33901 - Biochemistry Laboratory

- CHM 49400 - Junior-Senior Chemistry Seminar
- CHM 49900 - Special Assignments - 2 credits recommended
- BIOL 24100 - Biology IV: Genetics And Molecular Biology or
- AGRY 32000 - Genetics
- BIOL 24200 - Laboratory In Biology IV: Genetics And Molecular Biology or
- AGRY 32100 - Genetics Laboratory
- CHM 43800 - Introduction To Molecular Biotechnology or
- CHM 53800 - Molecular Biotechnology or
- BCHM 56200 - General Biochemistry II

15 Credits

Fall 4th Year

- CHM 37300 - Physical Chemistry
- CHM 37301 - Physical Chemistry Laboratory
- CHM 49900 - Special Assignments
- COM 21700 - Science Writing And Presentation
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics

16 Credits

Spring 4th Year

- CHM 34200 - Inorganic Chemistry
- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- Science Core Selection - Credit Hours: 3.00
- Great Issues In Science - Credit Hours: 3.00

13 Credits

Notes

- **Satisfies a Non-departmental Major Course Requirement
- Students must earn a cumulative GPA of 2.0 in all CHM courses.
- Students must have 32 credits at the 30000 level or above taken at Purdue.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- Students may graduate with Honors in Chemistry distinction. An approved honors thesis and a min of 3.4 GPA are required. Consult your CHM advisor.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Chemistry (ACS), BSCH

About the Program

Chemistry at Purdue University has a ratio of 1 faculty member for every 8 undergraduates, which allows students to enjoy a great deal of individualized attention. It also offers opportunities for mentoring programs and cutting-edge undergraduate research in a wide range of fields from drug discovery to climate change. Chemistry majors can pursue one of two degrees: B.S. in chemistry, accredited by the American Chemical Society (ACS); or the more flexible B.S. with chemistry as a field of study.

Chemistry (ACS accredited) is designed primarily for students planning professional careers as chemists in industry, universities, or research institutes. This degree program fulfills the recommendations of the Committee of Professional Training of the ACS and graduates will be certified by the ACS as having fulfilled its recommended requirements.

This degree provides an excellent preparation for students pursuing graduate school in Chemistry.

There is also the opportunity to complete in five years a dual degree with chemical engineering if the student has been accepted into the College of Engineering.

Chemistry - American Chemical Society Website

Chemistry Department Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (76-83 credits)

Required Major Courses (46-48 credits)

- CHM 24100 - Introductory Inorganic Chemistry
- CHM 26505 - Organic Chemistry
- CHM 26605 - Organic Chemistry
- CHM 34200 - Inorganic Chemistry
- CHM 34201 - Inorganic Chemistry Laboratory
- CHM 37300 - Physical Chemistry
- CHM 37301 - Physical Chemistry Laboratory
- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- CHM 42400 - Analytical Chemistry II
- CHM 51300 - Chemical Literature
- CHM 12500 - Introduction To Chemistry I ♦ or
- CHM 11500 - General Chemistry ♦ (satisfies Science Selective for core)
- CHM 12600 - Introduction To Chemistry II or
- CHM 11600 - General Chemistry
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors
- CHM 43300 - Biochemistry or
- CHM 53300 - Introductory Biochemistry

Required Seminars (3 credits)

- CHM 19400 - Freshman Chemistry Orientation
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 49400 - Junior-Senior Chemistry Seminar

Chemistry Selective (3 credits)

- CHM 43800 - Introduction To Molecular Biotechnology
- CHM 46200 - Intermediate Organic Chemistry
- CHM 48100 - Environmental Chemistry
- CHM 49900 - Special Assignments
- CHM 53800 - Molecular Biotechnology
- CHM 56000 - Organic Spectroscopic Analysis
- CHM 57900 - Computational Chemistry
- CHM 58100 - Atmospheric Chemistry

Required Calculus and Physics Courses (24-29 credits)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- MA 26200 - Linear Algebra And Differential Equations or
- MA 26500 - Linear Algebra and MA 26600 - Ordinary Differential Equations
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

Other Departmental /Program Course Requirements (21-62 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming or
- CS 17700 - Programming With Multimedia Objects

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics

Team-Building and Collaboration

Met with required major coursework.

Electives (0-23 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CHM 19400 - Freshman Chemistry Orientation
- CHM 12500 - Introduction To Chemistry I ♦ or
- CHM 11500 - General Chemistry ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core First-Year Composition Selection - Credit Hours: 3.00

- Science Core Selection - Credit Hours: 3.00

15-18 Credits

Spring 1st Year

- PHYS 17200 - Modern Mechanics
- CHM 12600 - Introduction To Chemistry II or
- CHM 11600 - General Chemistry
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00

15-17 Credits

Fall 2nd Year

- CHM 26505 - Organic Chemistry
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

14-15 Credits

Spring 2nd Year

- CHM 26605 - Organic Chemistry
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- MA 26200 - Linear Algebra And Differential Equations or
- MA 26500 - Linear Algebra and MA 26600 - Ordinary Differential Equations
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- CHM 37300 - Physical Chemistry
- CHM 37301 - Physical Chemistry Laboratory
- CHM 32100 - Analytical Chemistry I or

- CHM 32300 - Analytical Chemistry I Honors
- CS 15900 - C Programming or
- CS 17700 - Programming With Multimedia Objects
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics

14-15 Credits

Spring 3rd Year

- CHM 24100 - Introductory Inorganic Chemistry
- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- CHM 51300 - Chemical Literature
- COM 21700 - Science Writing And Presentation
- Science Core Selection - Credit Hours: 3.00

15 Credits

Fall 4th Year

- CHM 49400 - Junior-Senior Chemistry Seminar
- CHM 43300 - Biochemistry or
- CHM 53300 - Introductory Biochemistry
- Great Issues In Science Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

13 Credits

Spring 4th Year

- CHM 34200 - Inorganic Chemistry
- CHM 34201 - Inorganic Chemistry Laboratory
- CHM 42400 - Analytical Chemistry II
- Chemistry Slective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

13 Credits

Notes

- **Satisfies a Non-departmental Major Course Requirement
- Students must earn a cumulative GPA of 2.0 in all CHM courses.
- Students must have 32 credits at the 30000 level or above taken at Purdue.

- 2.0 Graduation GPA required for Bachelor of Science degree.
- Students may graduate with Honors in Chemistry distinction. An approved honors thesis and a min of 3.4 GPA are required. Consult your CHM advisor.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Chemistry, BS

About the Program

Chemistry at Purdue University has a ratio of 1 faculty member for every 8 undergraduates, which allows students to enjoy a great deal of individualized attention. It also offers opportunities for mentoring programs and cutting-edge undergraduate research in a wide range of fields from drug discovery to climate change.

The B.S. program with chemistry as a field of study is designed for those who want training in chemistry and freedom to pursue minors or second majors in other areas. Common areas of interest have been Forensic Sciences, Biology, Foreign Languages, Management, Psychology, and other Liberal Arts areas. The flexibility in this program adapts easily to Study Abroad semesters.

Chemistry Website

Chemistry Department Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (60-64 credits)

Required Major Courses (37-39 credits)

- CHM 24100 - Introductory Inorganic Chemistry
- CHM 26505 - Organic Chemistry
- CHM 26605 - Organic Chemistry
- CHM 34200 - Inorganic Chemistry
- CHM 37300 - Physical Chemistry
- CHM 37301 - Physical Chemistry Laboratory
- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- CHM 12500 - Introduction To Chemistry I ♦ or
- CHM 11500 - General Chemistry ♦ (satisfies Science for core)
- CHM 12600 - Introduction To Chemistry II or
- CHM 11600 - General Chemistry
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors

Required Seminar Courses (3 credits)

- CHM 19400 - Freshman Chemistry Orientation
- CHM 29400 - Sophomore Chemistry Seminar
- CHM 49400 - Junior-Senior Chemistry Seminar

Required Calculus and Physics Courses (20-22 credits)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- MA 26100 - Multivariate Calculus
- PHYS 17200 - Modern Mechanics
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

Other Departmental /Program Course Requirements (21-62 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming or
- CS 17700 - Programming With Multimedia Objects

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I

- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science

Met with required major coursework.

Mathematics

Met with required major coursework.

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics

Team-Building and Collaboration

Met with required major coursework.

Electives (0-29 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CHM 19400 - Freshman Chemistry Orientation
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I ♦ or
- MA 16500 - Analytic Geometry And Calculus I ♦
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00

15-19 Credits

Spring 1st Year

- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

14-16 Credits

Fall 2nd Year

- CHM 26505 - Organic Chemistry ♦

- CHM 29400 - Sophomore Chemistry Seminar
- MA 26100 - Multivariate Calculus
- PHYS 17200 - Modern Mechanics
- CHM 26500 - Organic Chemistry Laboratory or
- CHM 26700 - Organic Chemistry Laboratory Honors

14 Credits

Spring 2nd Year

- CHM 26605 - Organic Chemistry
- CHM 26600 - Organic Chemistry Laboratory or
- CHM 26800 - Organic Chemistry Laboratory Honors
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15 Credits

Spring 3rd Year

- CHM 24100 - Introductory Inorganic Chemistry
- CS 17700 - Programming With Multimedia Objects or
- CS 15900 - C Programming
- Science Core Selection - Credit Hours: 3.00
- Great Issues In Science - Credit Hours: 3.00

13 - 14 Credits

Fall 4th Year

- CHM 37300 - Physical Chemistry

- CHM 37301 - Physical Chemistry Laboratory
- CHM 49400 - Junior-Senior Chemistry Seminar
- COM 21700 - Science Writing And Presentation
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

14 Credits

Spring 4th Year

- CHM 37400 - Physical Chemistry
- CHM 37401 - Physical Chemistry Laboratory
- CHM 34200 - Inorganic Chemistry
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 4.00 or 5.00

14 - 15 Credits

Notes

- **Satisfies a Non-departmental Major Course Requirement
- Students must earn a cumulative GPA of 2.0 in all CHM courses.
- Students must have 32 credits at the 30000 level or above taken at Purdue.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- Students may graduate with Honors in Chemistry distinction. An approved honors thesis and a min of 3.4 GPA are required. Consult your CHM advisor.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
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World Language Courses

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ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

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Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Minor

Chemistry Minor

Chemistry Minor provides a strong background in Chemistry for students majoring in some other discipline.

Requirements for the Minor (16 credits)

Courses for the minor can be from Areas 1 and 2 or only Area 2. Before undertaking this minor, the student must establish the prerequisites for the required minor courses.

Area 1 Organic Chemistry (maximum 10 credits)

Only one course in each Part can count toward the minor.

Part I

- CHM 25500 - Organic Chemistry
- CHM 26100 - Organic Chemistry
- CHM 26505 - Organic Chemistry
- MCMP 20400 - Organic Chemistry I *

Part II

- CHM 25600 - Organic Chemistry
- CHM 26200 - Organic Chemistry
- CHM 26605 - Organic Chemistry
- MCMP 20500 - Organic Chemistry II *

Part III

- CHM 25501 - Organic Chemistry Laboratory
- CHM 26300 - Organic Chemistry Laboratory
- CHM 26500 - Organic Chemistry Laboratory
- CHM 26700 - Organic Chemistry Laboratory Honors

Part IV

- CHM 25601 - Organic Chemistry Laboratory
- CHM 26400 - Organic Chemistry Laboratory
- CHM 26600 - Organic Chemistry Laboratory
- CHM 26800 - Organic Chemistry Laboratory Honors

Area 2 Additional Selectives

- BCHM 56100 - General Biochemistry I or
- CHM 33900 - Biochemistry: A Molecular Approach or
- CHM 43300 - Biochemistry or
- CHM 53300 - Introductory Biochemistry
- CHM 32100 - Analytical Chemistry I or
- CHM 32300 - Analytical Chemistry I Honors
- CHM 37000 - Topics In Physical Chemistry or
- CHM 37400 - Physical Chemistry
- CHM 37200 - Physical Chemistry or
- CHM 37300 - Physical Chemistry
- CHM 24100 - Introductory Inorganic Chemistry
- CHM 33901 - Biochemistry Laboratory
- CHM 34200 - Inorganic Chemistry
- CHM 34201 - Inorganic Chemistry Laboratory
- CHM 37301 - Physical Chemistry Laboratory
- CHM 37401 - Physical Chemistry Laboratory
- CHM 42400 - Analytical Chemistry II
- CHM 43800 - Introduction To Molecular Biotechnology
- CHM 46200 - Intermediate Organic Chemistry
- CHM 48100 - Environmental Chemistry
- CHM 49000 - Selected Topics In Chemistry For Upper-Division Students - Great Issues
- CHM 49900 - Special Assignments - Undergraduate Research - up to 3 credits
- CHM 51300 - Chemical Literature

- CHM 56000 - Organic Spectroscopic Analysis
- CHM 57900 - Computational Chemistry
- CHM 58100 - Atmospheric Chemistry

Notes

- Please note that CHM 20000, CHM 22400, CHM 25700 and CHM 33300 cannot be used to complete the minor.
- *In Area 1, MCMP 20400 will count as courses from both Parts I and III; and MCMP 20500 will count as courses from both Parts II and IV.
- To qualify for the minor, the following classes must be completed with a cumulative GPA of 2.0 or better.
- All courses for this minor must be taken at Purdue University West Lafayette.
- Study Abroad CHM courses approved by the Department of Chemistry will be allowed to meet the minor requirements.

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Department of Computer Science

Department of Computer Science

Purdue Computer Science is one of the country's top-ranked programs. Faculty members are shaping the future of information technology through cutting-edge research. Students can take courses that include such topics as artificial intelligence and machine learning, security and cryptography, software engineering, networking, operating systems, graphics and animation, competitive programming, distributed systems, information systems, and bioinformatics. Computer Science graduates pursue careers in software engineering, data science, systems development, animation and visualization, computational finance, consulting, information security, wireless systems, embedded systems, and biotechnology. Many also go on to graduate or professional school in areas such as engineering, business, law, or medicine.

The Department also offers a Data Science program. A major in data science puts graduates at the forefront of an emerging field and prepares them for an exciting career at the intersection of computer science and statistics. Data Science is the interdisciplinary field of inquiry that uses quantitative and analytical methods to help gain insights and predictions based on big data. Students learn about key computational methods and statistical techniques and develop the deep analytical thinking skills needed to reason reliably, intelligently and creatively from data. The vast amounts of data generated every day has created a data-rich and data-driven world. The data science major opens pathways to careers in virtually every area of society, from healthcare, security and sustainability to education, business and economics.

The department is located in the Lawson Computer Science Building, which opened in 2006. In addition to offering an inviting and comfortable environment, the building is equipped with cutting-edge networking and computing technologies, including 10-gigabit Ethernet cabling and wireless access throughout the building. There are four classrooms, five instructional labs, five research labs, and a student activity center. The building also offers students a variety of interaction areas, and a deli-style café and espresso bar. A 16-by-9 foot tiled video wall is used for a variety of purposes, including notices of campus events, workshop and colloquium speakers, news and information, sporting events, research demonstrations, and class projects.

The Purdue Computer Science Department offers a Bachelor of Science (BS), a minor in computer science, or a 5-year combined BS/MS degree. The department also offers an Honors Program, and the opportunity to participate in the Cooperative Education Program. A transfer program is also available, TSAP in Computer Science.

Computer Science Website

Faculty

Contact Information

General Department Contact

Purdue University
Department of Computer Science
305 N. University Street
West Lafayette, IN 47907-2107
Phone: (765) 494-6010
Fax: (765) 494-0739

Graduate Information

For Graduate Information please see Computer Science Graduate Program Information.

Baccalaureate

Computer Science Honors, BS

About the Program

Students in the Computer Science Honors major, in addition to fulfilling all the requirements for a BS in Computer Science, will complete additional coursework and a research project. Honors students must maintain an overall GPA of 3.25 plus at least a 3.6 in Computer Science and required CSHO courses. The program requirements include additional math coursework, three out of four selected CS and ECE courses, a research seminar and project, and a graduate level course. It is especially suitable for students planning on graduate level coursework, though it also offers advantages to students seeking employment.

Students are invited to declare the major if they meet the qualifications after their first semester or after completion of the six core courses. Students who have been admitted to the Honors College may also join the major. Students may also request to declare the major if they meet qualifications no later than their seventh semester (student must have at least 2 academic semesters remaining to accommodate both the research seminar and the research project).

- Computer Science Concentration - Computational Science and Engineering Track
- Computer Science Concentration - Computer Graphics and Visualization Track
- Computer Science Concentration - Database and Information Systems Track (DBIS)
- Computer Science Concentration - Algorithmic Foundations
- Computer Science Concentration - Machine Intelligence Track (MI)
- Computer Science Concentration - Programming Language Track (PL)
- Computer Science Concentration - Security Track

- Computer Science Concentration - Software Engineering Track
- Computer Science Concentration - Systems Software Track

Computer Science Website

Computer Science Major Change (CODO) Requirements (Students must first CODO into Computer Science before Honors.)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science

- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Computer Science Honors Major Courses (58-63 credits)

Required CS Honors Major Math Courses (7-8 credits)

Must have C or better to meet prerequisite for certain upper level CS courses

- MA 35100 - Elementary Linear Algebra
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Required CS Major Core Courses (21 credits)

Must have C or better in all courses.

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ (satisfies Computing and Teambuilding for College of Science)
- CS 18200 - Foundations Of Computer Science ♦
- CS 24000 - Programming In C ♦
- CS 25000 - Computer Architecture
- CS 25100 - Data Structures And Algorithms
- CS 25200 - Systems Programming

Required CS Major Track Selectives (18-21 credits)

Must have C or better in all courses.

- CS Track Required course - Credit Hours: 3.00
- CS Track Required course - Credit Hours: 3.00
- CS Track Required/Elective course - Credit Hours: 3.00
- CS Track Required/Elective course - Credit Hours: 3.00
- CS Track Elective course - Credit Hours: 3.00
- CS Track Elective course - Credit Hours: 3.00
- CS Track Elective course (if Computational Science & Engineering track or Database & Information Systems track) - Credit Hours: 3.00

Required CS Honors - (12-13 credits)

Need CS GPA of 3.60 or better & cumulative GPA of 3.25 and must have a C or better in all courses

- CS 39700 - Honors Seminar
- CS 49700 - Honors Research Project (may use for Track Elective - see Track chairperson for approval)
- MA 35301 - Linear Algebra II or
- MA 41600 - Probability or
- MA 51800 - Advanced Discrete Mathematics or
- An approved MA course with course number higher than MA 35100 - Elementary Linear Algebra or
- An approved STAT course with course number higher than STAT 51100 - Statistical Methods
- CS 50000 level course (may use for Track Elective - see Track chairperson for approval) - Credit Hours: 3.00
- Three out of the four following courses: CS 35400, CS 35200, CS 38100, ECE 27000. CS 35400, CS 35200, and CS 38100 may be used to meet track requirements if the courses are required or electives for the student's track.

Other Departmental/Program Course Requirements (32-55 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I

- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200) or
- MA 16500 - Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200)
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 51100 - Statistical Methods ♦

Team-Building and Collaboration

Met with required major coursework.

Electives (2-30 credits)

Enrollment in freshman seminar courses CS 19100 and CS 19300 is required with CS 18000. They are not degree requirements. CS 19700 - Freshman Honors Seminar, CS 29100 - Sophomore Development Seminar, and CS 39100 are optional but recommended.

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ ***
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (CS 19100 suggested)
- Elective - Credit Hours: 1.00 (CS 19300 suggested)
- Elective - Credit Hours: 2.00

15-17 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science *** ♦

- CS 24000 - Programming In C *** ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Electives - Credit Hours: 1.00 (Recommended CS 19700)
- Electives - Credit Hours: 1.00

15-17 Credits

Fall 2nd Year

- CS 25000 - Computer Architecture ***
- CS 25100 - Data Structures And Algorithms ***
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00 (Recommended CS 29100)

15-17 Credits

Spring 2nd Year

- CS 25200 - Systems Programming ***
- MA 35100 - Elementary Linear Algebra
- COM 21700 - Science Writing And Presentation ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-17 Credits

Fall 3rd Year

- MA 35301 - Linear Algebra II *** or
- MA 41600 - Probability *** or
- MA 51800 - Advanced Discrete Mathematics *** or
- An approved MA course with a course number higher than MA 35100 - Elementary Linear Algebra *** or
- An approved MA course with a course number higher than STAT 51100***
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 51100 - Statistical Methods
- CS track requirement - Credit Hours: 3.00 *** (Suggested CS 35200)
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (Recommended CS 39100)
- Elective - Credit Hours: 3.00

16-17 Credits

Spring 3rd Year

- CS track requirement- Credit Hours: 3.00 *** (Suggested CS 35400)
- CS track requirement/elective - Credit Hours: 3.00 ***
- Great Issues In Science - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- CS 39700 - Honors Seminar
- CS track elective - Credit Hours: 3.00 *** (Suggested CS 38100)
- CS track requirement/elective - Credit Hours: 3.00 ***
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Spring 4th Year

- CS 49700 - Honors Research Project
- CS track elective - Credit Hours: 3.00 ***
- CS 50000 level - Credit Hours: 3.00 ***
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Notes

- 2.0 Major and Graduation GPA required for Bachelor of Science degree.
- 3.6 CS GPA and 3.25 cumulative GPA is required for graduation with the CS Honors degree.
- ***All CS core courses and all track requirements, regardless of department, must be completed with a grade of "C" or higher (effective fall 2011). All prerequisites to CS core courses and track requirements, regardless of department, must be completed with a grade of C or higher (effective Fall 2015). Information about CS Tracks -click here

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.

- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Computer Science, BS

About the Program

Purdue Computer Science is one of the country's top-ranked programs. Faculty members are shaping the future of information technology through cutting-edge research. Students can take courses that include such topics as graphics and animation, web

programming, competitive programming, cryptography and security, networks, software engineering, distributed systems, information systems, artificial intelligence, and bioinformatics.

The flexible curriculum offers students the opportunity to be involved in a dynamic discipline that will continue to grow and to contribute significantly to progress in many other disciplines and ultimately to changes in human society that are nothing short of profound. Students learn communication skills, teamwork, and problem-solving skills and acquire the necessary technical skills for positions in computing throughout society.

Computer Science Website

Computer Science Major Change (CODO) Requirements

Computer Science students begin by taking six core courses that teach them the fundamentals of computer science. Students can then select one or more tracks, which allow them to deepen their understanding in a specific area (or areas) of Computer Science. These academic tracks include:

- Computer Science Concentration - Computational Science and Engineering Track
- Computer Science Concentration - Computer Graphics and Visualization Track
- Computer Science Concentration - Database and Information Systems Track (DBIS)
- Computer Science Concentration - Algorithmic Foundations
- Computer Science Concentration - Machine Intelligence Track (MI)
- Computer Science Concentration - Programming Language Track (PL)
- Computer Science Concentration - Security Track
- Computer Science Concentration - Software Engineering Track
- Computer Science Concentration - Systems Software Track

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Computer Science Major Courses (46-50 credits)

Required CS Major Math Courses (7-8 credits)

Must have C or better to meet prerequisite for certain upper level CS courses

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- MA 26500 - Linear Algebra or
- MA 35100 - Elementary Linear Algebra

Required CS Major Core Courses (21 credits)

Must have C or better in all courses.

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ (satisfies Computing and Teambuilding requirements for College of Science core)
- CS 18200 - Foundations Of Computer Science ♦

- CS 24000 - Programming In C ♦
- CS 25000 - Computer Architecture
- CS 25100 - Data Structures And Algorithms
- CS 25200 - Systems Programming

Required CS Major Track Selectives (18-21 credits)

Please see links to all track requirements above.

Must have a C or better in all courses. Select track from list above.

- CS Track Required course - Credit Hours: 3.00
- CS Track Required Course - Credit Hours: 3.00
- CS Track Required/Elective course - Credit Hours: 3.00
- CS Track Required/Elective course - Credit Hours: 3.00
- CS Track Elective course - Credit Hours: 3.00
- CS Track Elective course - Credit Hours: 3.00
- CS Track Elective course (if Computational Science & Engineering track or Database & Information Systems track) - Credit Hours: 3.00

Other Departmental/Program Course Requirements (32-54 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II

- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200) or
- MA 16500 - Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200)
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 51100 - Statistical Methods ♦

Team-Building and Collaboration

Met with required major coursework.

Electives (16-42 credits)

CS 19100 - Freshman Resources Seminar and CS 19300 - Tools are required freshman seminar courses; corequisites with CS 18000. They are not degree requirements. CS 29100 - Sophomore Development Seminar and CS 39100 - Junior Resources Seminar are optional but recommended.

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ ***
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00-4.00
- Elective - Credit Hours: 1.00 (CS 19100 suggested.)

- Elective - Credit Hours: 1.00 (CS 19300 suggested.)

13-15 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science ♦ ***
- CS 24000 - Programming In C ♦ ***
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Electives - Credit Hours: 1.00 - 3.00

14-18 Credits

Fall 2nd Year

- CS 25000 - Computer Architecture ***
- CS 25100 - Data Structures And Algorithms ***
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (CS 29100 recommended)

15-17 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- CS 25200 - Systems Programming ***
- MA 26500 - Linear Algebra or
- MA 35100 - Elementary Linear Algebra
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-17 Credits

Fall 3rd Year

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 51100 - Statistical Methods ♦
- CS track requirement - Credit Hours: 3.00 ***
- CS track requirement - Credit Hours: 3.00 ***
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (CS 39100 recommended)

- Elective - Credit Hours: 3.00

16-17 Credits

Spring 3rd Year

- CS track requirement - Credit Hours: 3.00 ***
- CS track requirement - Credit Hours: 3.00 ***
- Great Issues In Science Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- CS track requirement - Credit Hours: 3.00 ***
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16-18 Credits

Spring 4th Year

- CS track requirement - Credit Hours: 3.00 ***
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-17 Credits

Notes

- 2.0 Major and Graduation GPA required for Bachelor of Science degree.
- ***All CS core courses and all track requirements, regardless of department, must be completed with a grade of "C" or higher.
- All prerequisites to CS core courses and track requirements, regardless of department, must be completed with a grade of C or higher.
- Enrollment in freshman seminar courses CS 19100 and CS 19300 is required with CS 18000. They are not degree requirements. CS 29100 - Sophomore Development Seminar and CS 39100 - Junior Resources Seminar are optional but recommended.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Data Science, BS (CS)

About the Program

Majoring in data science at Purdue will place you at the forefront of an emerging field and prepare you for an exciting career at the intersection of computer science and statistics.

Created jointly by Purdue's Department of Computer Science and Department of Statistics, the data science major will open pathways to careers in virtually every area of society, from healthcare, security and sustainability to education, business and economics.

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Data Science Major Courses (50-54 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ (satisfies Computing and Teambuilding for College of Science core)
- CS 18200 - Foundations Of Computer Science
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- CS 25100 - Data Structures And Algorithms
- CS 37300 - Data Mining And Machine Learning
- CS 38003 - Python Programming
- CS 49000 - Topics In Computer Sciences For Undergraduates - (Large Scale Data Analysis (LSDA))
- MA 35100 - Elementary Linear Algebra
- STAT 35500 - Statistics For Data Science
- STAT 41600 - Probability
- STAT 41700 - Statistical Theory
- CS 24200 - Introduction To Data Science or
- STAT 24200 - Introduction To Data Science
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Ethics Selective (3 credits)

Choose one option.

- ILS 23000 - Data Science And Society: Ethical Legal Social Issues
- PHIL 20700 - Ethics For Technology, Engineering, And Design
- PHIL 20800 - Ethics Of Data Science - (must be 3.00 Credit Hour option)

CS Selectives (6 credits)

Choose two.

- CS 31400 - Numerical Methods
- CS 35500 - Introduction To Cryptography
- CS 47100 - Introduction to Artificial Intelligence
- CS 47300 - Web Information Search And Management
- CS 49000 - Topics In Computer Sciences For Undergraduates - IDV-Introduction to Data Visualization

- CS 30700 - Software Engineering I or
- CS 40800 - Software Testing
- CS 34800 - Information Systems or
- CS 44800 - Introduction To Relational Database Systems
- CS 38100 - Introduction To The Analysis Of Algorithms or
- CS 48300 - Introduction To The Theory Of Computation

Statistics Selective (3 credits)

Choose one.

- STAT 42000 - Introduction To Time Series
- STAT 50600 - Statistical Programming And Data Management
- STAT 51200 - Applied Regression Analysis
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments
- STAT 52200 - Sampling And Survey Techniques
- STAT 52500 - Intermediate Statistical Methodology
- MA 49000 - Topics In Mathematics For Undergraduates - Elementary Stochastic Processes or
- STAT 49000 - Topics In Statistics For Undergraduates - Elementary Stochastic Processes

Capstone Experience (0-3 credits)

Choose one option below.

For-Credit Options:

- STAT 49000 - Topics In Statistics For Undergraduates (Data Science Capstone or Research Project In Data Science) - Credit Hours: 3.00
- CS 49000 - Topics In Computer Sciences For Undergraduates - Introduction to Data Visualization (if taken after CS 37300; could not be used as CS Elective) - Credit Hours: 3.00
- CS 30700 - Software Engineering I (if taken after CS 37300; could not be used as CS Elective)
- CS 49700 - Honors Research Project
- EPCS 41100 - Senior Design Participation In EPICS
- EPCS 41200 - Senior Design Participation In EPICS

Zero-Credit Options:

- CS 38600 - Professional Practice IV or
- STAT 38600 - Cooperative Work Experience IV
- CS 48700 - Professional Practice V or
- STAT 48700 - Cooperative Work Experience V
- CS 49000 Research Project in Data Science - Credit Hours: 0.00 or
- STAT 49000 Research Project in Data Science - Credit Hours: 0.00

Other Departmental/Program Course Requirements (29-52 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200) or

- MA 16500 - Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200)
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with required major coursework.

Electives (14-41 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ *
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00

16-18 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science *
- CS 38003 - Python Programming
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00

15-18 Credits

Fall 2nd Year

- STAT 35500 - Statistics For Data Science
- CS 24200 - Introduction To Data Science or
- STAT 24200 - Introduction To Data Science
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 3.00

14-18 Credits

Spring 2nd Year

- CS 25100 - Data Structures And Algorithms *
- MA 35100 - Elementary Linear Algebra
- STAT 41600 - Probability
- ILS 23000 - Data Science And Society: Ethical Legal Social Issues ♦ or
- PHIL 20700 - Ethics For Technology, Engineering, And Design ♦ or
- PHIL 20800 - Ethics Of Data Science ♦ - (must be 3.00 Credit Hour option)
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 2.00

16-18 Credits

Fall 3rd Year

- CS 37300 - Data Mining And Machine Learning
- STAT 41700 - Statistical Theory
- COM 21700 - Science Writing And Presentation
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- CS Selective - Credit Hours 3.00
- Statistics Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- CS 49000 - Topics In Computer Sciences For Undergraduates - (Large Scale Data Analytics (LSDA))
- CS Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00 - 3.00

16-17 Credits

Spring 4th Year

- Capstone Experience/Course - Credit Hours: 0.00 - 3.00

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

13-18 Credits

Notes

- A minimum of 32 semester credits of upper level (30000+) required
- 2.0 Major and Graduation GPA required for Bachelor of Science degree.
- *All CS and STAT courses required for the major, must be completed with a grade of "C" or better.
- *All prerequisites to CS and STAT courses required for the major, regardless of department, must be completed with a grade of "C" or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

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Minor

Computer Science Minor

Application Process

Students must have completed with a 'C' grade or better both CS 18000 and a Math class as follows:

- CS 18000 (or receive a 4 or a 5 on the AP Computer Science test and pass the CS 18000 test-out exam) **and**
 - MA 16100 or MA 16500 or (MA 16010 and MA 16020)
- or**
- prior to the Fall 2016 semester, MA 16300, or MA 16700, or (MA 16010 and MA MA 16020), or MA 16021
 - **or** establish credit for Calculus I through AP credit, Transfer Credit, or credit by exam.

To apply:

1. Complete the CS Minor Application with your advisor.
2. Submit complete and signed application to the administrative assistant in the CS Undergraduate Advising Office (LWSN 1123) between 8:00 am - 12:00 pm, or 1:00 pm - 5:00 pm, Monday through Friday, or to an advisor during their posted non-major walk-in hours. If the application is approved, a minor in Computer Science will be granted upon completion of the following requirements:
 - Five (5) CS courses from the list below. AP credit plus CS 18000 test out can be used for the minor application as described above, but will not count toward the five required CS courses.
 - All courses' pre-requisites must be met in order to enroll in CS courses. Click the link for each course to see the required pre-requisites.
 - All courses must be taken at the Purdue West Lafayette campus.
 - A minimum grade of 'C' in all CS courses used towards the minor is required. (A 'C-' is not accepted.)

- **Enrollment in all CS courses and admission to the CS minor is subject to space availability.** CS Minors are expected to take CS courses during off-peak sessions. Students are responsible for maintaining an up-to-date minor plan of study, for knowing registration timelines, and for requesting space through the correct process. Computer Science majors are given priority in registering for CS classes.
- CS Minors may take a total of five (5) CS major courses and no more.

Requirements for the Minor (16-18 credits)

Required Courses (10 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming *
- CS 18200 - Foundations Of Computer Science **
- CS 24000 - Programming In C

Elective Courses - Choose Two (6-8 credits)

- CS 25000 - Computer Architecture
- CS 25100 - Data Structures And Algorithms
- CS 25200 - Systems Programming
- CS 30700 - Software Engineering I
- CS 31400 - Numerical Methods
- CS 33400 - Fundamentals Of Computer Graphics
- CS 34800 - Information Systems
- CS 35500 - Introduction To Cryptography
- CS 38100 - Introduction To The Analysis Of Algorithms
- CS 40800 - Software Testing
- CS 44800 - Introduction To Relational Database Systems
- CS 47100 - Introduction to Artificial Intelligence

Notes

- *Students with AP CS credit plus CS 18000 test out (as described above) may use their AP credit in place of CS 18000 as a pre-requisite for other CS courses, but AP credit will not count toward the five (5) CS courses. In this case, the student must choose three of the Elective Courses.
- **Math majors may use MA 37500 in place of CS 18200 as a pre-requisite for other CS courses, but MA 37500 will not count toward the five (5) CS courses. In this case, the student must choose three of the Elective Courses.

Disclaimer

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The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Pre-Program

Data Science First Year (CS)

Data Science First Year

Program Requirements (25-28 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ * (satisfies Computing and Teambuilding for College of Science core)
- CS 18200 - Foundations Of Computer Science *
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- CS 38003 - Python Programming
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 4.00

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ *
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00

16-18 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science *
- CS 38003 - Python Programming
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00

15-17 Credits

Notes

- *All CS and STAT courses required for the major, must be completed with a grade of "C" or better.
- *All prerequisites to CS and STAT courses required for the major, regardless of department, must be completed with a grade of "C" or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Department of Earth, Atmospheric, and Planetary Sciences

Overview

The Department of Earth, Atmospheric, and Planetary Sciences (EAPS) is dedicated to providing a top-rate education for undergraduate and graduate students, as well as being dedicated to contributing to our sciences through research. EAPS is the multidisciplinary department of the College of Science, requiring the use of mathematics, physics, chemistry, statistics, and computer science to research problems; along with state of the art computer and laboratory facilities for calculation, visualization, and experimentation. Our programs intersect disciplines, with faculty and students studying in fields such as energy and the environment, severe weather science, planetary exploration, and geodata science. Our faculty, students and staff are dedicated to the department's mission, strategic plan, and fostering an environment of diversity and inclusivity. Guided by our values, we continue to expand, recruiting top-notch academic staff. I welcome you to contact us or check our website at eaps.purdue.edu if you are interested in learning more about the work that we do and the programs that we offer.

Department of Earth, Atmospheric, and Planetary Sciences Website

Faculty

Contact Information

Earth, Atmospheric, and Planetary Sciences Department
550 Stadium Mall Drive
Purdue University
West Lafayette, IN 47907-2051

Phone: 765 494-3258

Fax: 765 496-1210

Graduate Information

For Graduate Information please see Earth, Atmospheric, and Planetary Sciences Graduate Program Information.

Baccalaureate

Atmospheric Science, BS

About the Program

Atmospheric science focuses on mathematics, physics, chemistry, computer science, and statistics as well as atmospheric science. In this major students have several electives credits which they can use to broaden and enhance their educational experience and to specialize in the areas of weather forecasting, research, environmental monitoring, business, or broadcasting. Students can also participate in real-world forecasting, field work, and related opportunities. Research is an integral part of the program, and the Earth, Atmospheric, and Planetary Sciences (EAPS) Department has an excellent faculty to student ratio which allows students to have one-to-one interaction with their professors.

[Atmospheric Science/Meteorology Website](#)

[Earth, Atmospheric, and Planetary Sciences Department Major Change \(CODO\) Requirements](#)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (36 credits)

Required Major Courses

- EAPS 11700 - Introduction To Atmospheric Science ♦ (satisfies Science for core)
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences ♦
- EAPS 22500 - Science Of The Atmosphere ♦ (satisfies Science for core)
- EAPS 22700 - Introduction To Atmospheric Observation And Measurements
- EAPS 32000 - Physics Of Climate
- EAPS 42100 - Atmospheric Thermodynamics
- EAPS 42200 - Atmospheric Dynamics I
- EAPS 42300 - Atmospheric Dynamics II
- EAPS 43100 - Synoptic Laboratory I
- EAPS 43200 - Synoptic Laboratory II
- EAPS 43300 - Synoptic Lab III
- EAPS 50700 - Introduction To Analysis And Computing With Geoscience Data
- EAPS 53200 - Atmospheric Physics I
- EAPS 10000-level Earth System Selective - Credit Hours: 3.00
- EAPS 40000/50000 Selective - Credit Hours: 3.00

Other Departmental/Program Course Requirements (68-77 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ Labeled as a Science Core Selection in the four year plan of study

*Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 - Science Writing And Presentation is strongly recommended to satisfy Oral Communication for core.

Computing (4 credits)

- CS 17700 - Programming With Multimedia Objects ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one course from this list.

Laboratory Science (8 credits)

Required

- PHYS 17200 - Modern Mechanics (satisfies Science for core)

Choose one option.

- PHYS 27200 - Electric And Magnetic Interactions
- PHYS 24100 - Electricity And Optics and
- PHYS 25200 - Electricity And Optics Laboratory

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core; students should earn a minimum of a C-)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

Choose one.

- EAPS 31000 - Introductory Statistics For Geosciences
- STAT 30100 - Elementary Statistical Methods
- STAT 35000 - Introduction To Statistics
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods

Required Pre-Requisite Courses (14-16 credits)

- MA 26500 - Linear Algebra
- MA 26600 - Ordinary Differential Equations (Student should earn minimum of a C-.)
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- CHM 11500 - General Chemistry ♦ (satisfies Science for core) or
- CHM 12500 - Introduction To Chemistry I ♦ (satisfies Science for core)

Electives (9-32 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Additional Degree Requirements

[Click for Atmospheric Science Supplemental Information](#).

Program Requirements

Fall 1st Year

- EAPS 11700 - Introduction To Atmospheric Science ♦
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences ♦
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00-4.00

15-17 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00
- EAPS 10000-level Earth System Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15-17 Credits

Fall 2nd Year

- EAPS 22500 - Science Of The Atmosphere ♦
- EAPS 22700 - Introduction To Atmospheric Observation And Measurements
- PHYS 17200 - Modern Mechanics ♦
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

17-18 Credits

Spring 2nd Year

- EAPS 32000 - Physics Of Climate
- MA 26500 - Linear Algebra
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200
- Science Core Selection - Credit Hours: 3.00

13 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- EAPS 42100 - Atmospheric Thermodynamics
- EAPS 43100 - Synoptic Laboratory I
- MA 26600 - Ordinary Differential Equations
- Elective - Credit Hours: 3.00

13 Credits

Spring 3rd Year

- EAPS 42200 - Atmospheric Dynamics I
- EAPS 43200 - Synoptic Laboratory II
- EAPS 53200 - Atmospheric Physics I
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Fall 4th Year

- EAPS 42300 - Atmospheric Dynamics II
- EAPS 43300 - Synoptic Lab III
- EAPS 50700 - Introduction To Analysis And Computing With Geoscience Data
- Great Issues In Science Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

16 Credits

Spring 4th Year

- EAPS 40000/50000 Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 3.00

15 Credits

Notes

- 2.0 Graduation GPA required for Bachelor of Science degree
- 2.0 average in EAPS major classes required to graduate
- All courses, with the exception of Language & Culture, CS 17700, General Education, and Electives, must have a grade of C- or higher. All EAPS courses, regardless of area in plan of study, must have a grade of C- or higher.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).

- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Team-Building and Collaboration

Met with PHYS 17200.

Environmental Geoscience, BS

About the Program

The EAPS Environmental Geoscience major offers an interdisciplinary curriculum that immerses students in the fundamentals of geology, chemistry, atmospheric science, biology, math, and physics. This coursework prepares students so they can help solve challenging environmental problems such as climate change, emerging pollutants, shrinking and shifting energy resources, food production, and ecology. The Environmental Geoscience major at Purdue is flexible, allowing students to create their own coursework focus based on their particular scientific passion: air quality, soil and sediments, or hydrology. Undergraduate research is required in this major, and students have the opportunity to work directly with professors and industry leaders. Graduates develop quantitative problem-solving skills that make them highly competitive for further graduate school studies related to environmental science or careers in environmental monitoring, consulting, and decision support for environmental public policy.

Environmental Geoscience Website

Earth, Atmospheric, and Planetary Sciences Department Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)

- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses (54 credits)

Required Major Courses

- AGRY 25500 - Soil Science
- CHM 32100 - Analytical Chemistry I
- EAPS 11800 - Introduction To Earth Sciences ♦
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences
- EAPS 20000 - Water World: Processes And Challenges In Global Hydrology
- EAPS 22500 - Science Of The Atmosphere
- EAPS 24300 - Earth Materials I
- EAPS 31500 - Biogeochemistry
- EEE 36000 - Environmental And Ecological Engineering Laboratory (Credit Hours: 3.00)
- ASM 54000 - Geographic Information System Application or
- FNR 21000 - Natural Resource Information Management
- EAPS 10900 - The Dynamic Earth ♦ or
- EAPS 12500 - Environmental Science And Conservation ♦
- AGECE 20400 - Introduction To Resource Economics And Environmental Policy or
- POL 22300 - Introduction To Environmental Policy
- EAPS 38500 - Principles Of Engineering Geology or
- EEE 35500 - Engineering Environmental Sustainability
- EAPS 49700 - Earth And Atmospheric Sciences Undergraduate Readings And Research (Credit Hours: 3.00)
or
- EAPS 41900 - Internship In Environmental Geosciences (Credit Hours: 3.00)
- Environmental Selective^ - Credit Hours: 12.00 total

Other Departmental/Program Course Requirements (41-65 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ Labeled as a Science Core Selection in the four year plan of study

*Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one course from this list.

Laboratory Science (8-10 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦

- CHM 11600 - General Chemistry ♦ or
- CHM 12600 - Introduction To Chemistry II ♦

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core; students should earn a minimum of a C-)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

Choose one.

- EAPS 31000 - Introductory Statistics For Geosciences
- STAT 30100 - Elementary Statistical Methods
- STAT 35000 - Introduction To Statistics
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods

Required Pre-Requisite Course (4 credits)

Physics Selective - *Choose one option.*

- PHYS 17200 - Modern Mechanics ♦
- PHYS 22000 - General Physics ♦
- PHYS 23300 - Physics For Life Sciences I ♦ (if two semesters of Biology)

Electives (1-25 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Additional Degree Requirements

Click for Environmental Geoscience Supplemental Information.

Program Requirements

Fall 1st Year

- EAPS 11800 - Introduction To Earth Sciences ♦
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00-4.00

15-18 Credits

Spring 1st Year

- CHM 11600 - General Chemistry ♦ or
- CHM 12600 - Introduction To Chemistry II ♦
- EAPS 10900 - The Dynamic Earth ♦ or
- EAPS 12500 - Environmental Science And Conservation ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00
- Elective - Credit Hours: 1.00

15-18 Credits

Fall 2nd Year

- AGRY 25500 - Soil Science
- EAPS 22500 - Science Of The Atmosphere
- EAPS 24300 - Earth Materials I
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

16-18 Credits

Spring 2nd Year

- EAPS 20000 - Water World: Processes And Challenges In Global Hydrology
- EAPS 31000 - Introductory Statistics For Geosciences or
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics or
- STAT 50300 - Statistical Methods For Biology or
- STAT 51100 - Statistical Methods
- PHYS 17200 - Modern Mechanics ♦ or
- PHYS 22000 - General Physics ♦ or
- PHYS 23300 - Physics For Life Sciences I ♦
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

16 Credits

Fall 3rd Year

- CHM 32100 - Analytical Chemistry I
- EAPS 31500 - Biogeochemistry
- EEE 36000 - Environmental And Ecological Engineering Laboratory
- EAPS 38500 - Principles Of Engineering Geology or
- EEE 35500 - Engineering Environmental Sustainability

13 Credits

Spring 3rd Year

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- AGECE 20400 - Introduction To Resource Economics And Environmental Policy or
- POL 22300 - Introduction To Environmental Policy
- Environmental Selective - Credit Hours 3.00

- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- COM 21700 - Science Writing And Presentation
- ASM 54000 - Geographic Information System Application or
- FNR 21000 - Natural Resource Information Management
- Environmental Selective - Credit Hours: 3.00 ^
- Environmental Selective - Credit Hours: 3.00 ^
- Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- EAPS 49700 - Earth And Atmospheric Sciences Undergraduate Readings And Research or
- EAPS 41900 - Internship In Environmental Geosciences
- Great Issues In Science Selective - Credit Hours 3.00
- Environmental Selective - Credit Hours 3.00
- Science Core Selection - Credit Hours 3.00
- Science Core Selection - Credit Hours 3.00

15 Credits

Notes

- ^Environmental Selectives for advanced courses and specializations
- ^^Environmental Selectives with Labs for advanced courses and specializations
- 2.0 Graduation GPA required for Bachelor of Science degree
- 2.0 average in EAPS major courses required to graduate
- All courses, with the exception of Language & Culture, CS 17700, General Education, and Electives, must have a grade of C- or higher. All EAPS courses, regardless of area in plan of study, must have a grade of C- or higher.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).

- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Geology and Geophysics, BS

About the Program

Within the geology and geophysics major, students study math, chemistry, physics, and enroll in coursework in physical and historical geology, earth materials, surface processes, plate tectonics, structural geology, sedimentation and stratigraphy, computer-aided analysis, field methods, and a summer geology field camp. Students have a number of electives which can be used to take advanced coursework in seismology, crustal tectonics, engineering geology, hydrogeology, and a wide variety of other topics relevant to geologists. Faculty led classes, labs, and field experiences as well as undergraduate research (encouraged) are all components of this program.

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Major Courses (48 credits)

Required Major Courses (48 credits)

- EAPS 11800 - Introduction To Earth Sciences ♦
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences ♦
- EAPS 24300 - Earth Materials I ♦ (satisfies Science for core)
- EAPS 30900 - Computer-Aided Analysis For Geosciences
- EAPS 35200 - Structural Geology
- EAPS 35300 - Earth Surface Processes
- EAPS 35400 - Plate Tectonics
- EAPS 39000 - Geologic Field Methods
- EAPS 47400 - Sedimentation And Stratigraphy
- EAPS 10900 - The Dynamic Earth ♦ (satisfies Science for core) or
- EAPS 11200 - Earth Through Time ♦ (satisfies Science for core)
- EAPS 49000 - Field Geology In Rocky Mountains or
- EAPS 3XXXX Geology Field Experience (Transfer Course)
- EAPS Professional Elective (EAPS 30000:59900) - Credit Hours: 3.00
- EAPS Professional Elective (EAPS 30000:59900) - Credit Hours: 3.00
- Science/Engineering Elective (Level 20000:59900) -Credit Hours: 3.00
- Science/Engineering Elective (Level 20000:59900) - Credit Hours: 3.00

Other Departmental/Program Course Requirements (45-72 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ Labeled as a Science Core Selection in the four year plan of study

*Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one course from this list.

Laboratory Science (8 credits)

(satisfies Science for core)

- PHYS 17200 - Modern Mechanics ♦ or
- PHYS 22000 - General Physics ♦
- PHYS 22100 - General Physics or
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core; students should earn a minimum of a C-)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

Choose one.

- EAPS 31000 - Introductory Statistics For Geosciences
- STAT 30100 - Elementary Statistical Methods
- STAT 35000 - Introduction To Statistics
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods

Required Pre-Requisite Courses (8-10 credits)

- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦

- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II

Electives (0-27 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or

- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- EAPS 11800 - Introduction To Earth Sciences ♦
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences ♦
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I (Student should earn minimum of a C-) or
- MA 16500 - Analytic Geometry And Calculus I (Student should earn minimum of a C-)
- Science Core Selection - Credit Hours: 3.00-4.00

15-18 Credits

Spring 1st Year

- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II
- EAPS 11200 - Earth Through Time ♦ or
- EAPS 10900 - The Dynamic Earth ♦
- MA 16200 - Plane Analytic Geometry And Calculus II (Student should earn minimum of a C-) or
- MA 16600 - Analytic Geometry And Calculus II (Student should earn minimum of a C-)
- Science Core First-Year Composition Selection – Credit Hours: 3.00-4.00

14-17 Credits

Fall 2nd Year

- EAPS 24300 - Earth Materials I ♦
- PHYS 17200 - Modern Mechanics ♦ or
- PHYS 22000 - General Physics ♦
- Science Core Selection - Credit Hours: 3.00-4.00
- Science/Engineering Elective (Level 20000 to 59900) - Credit Hours: 3.00

14 Credits

Spring 2nd Year

- EAPS 35400 - Plate Tectonics
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 22100 - General Physics or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science/Engineering Elective (Level 20000 to 59900) - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15 Credits

Fall 3rd Year

- EAPS 35300 - Earth Surface Processes
- EAPS 47400 - Sedimentation And Stratigraphy
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Science Core Selection - Credit Hours: 3.00

13-14 Credits

Spring 3rd Year

- EAPS 30900 - Computer-Aided Analysis For Geosciences
- EAPS 35200 - Structural Geology
- EAPS 39000 - Geologic Field Methods
- EAPS 31000 - Introductory Statistics For Geosciences or
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics or
- STAT 50300 - Statistical Methods For Biology or
- STAT 51100 - Statistical Methods
- Team-Building & Collaboration - Credit Hours: 3.00

15 Credits

Summer 3rd Year

- EAPS 49000 - Field Geology In Rocky Mountains or
- EAPS 3XXXX - Geology Field Experience (Transfer Course) - Credit Hours: 6.00

6 Credits

Fall 4th Year

- EAPS Professional Elective (EAPS 30000:59900) - Credit Hours: 3.00

- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Great Issues In Science - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- COM 21700 - Science Writing And Presentation
- EAPS Professional Elective (EAPS 30000:59900) - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

12 Credits

Notes

- 2.0 Graduation GPA required for Bachelor of Science degree
- 2.0 average in EAPS major classes required to graduate
- All courses, with the exception of Language & Culture, CS 17700, General Education, and Electives, must have a grade of C- or higher. All EAPS courses, regardless of area in plan of study, must have a grade of C- or higher.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
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GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Planetary Sciences, BS

About the Program

Planetary sciences is a multidisciplinary study of planetary dynamics and includes course work in planetary geology, planetary atmospheres, planetary physics, spacecraft design and operation, and astronomy with elective options in astrobiology, impact cratering, and related topics with which to focus their study. All students receive a strong background in math, chemistry, physics, computer science, geophysics, and remote sensing and are encouraged to get involved in undergraduate research in this unique program.

Planetary Sciences Website

Earth, Atmospheric, and Planetary Sciences Department Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses (35 credits)

Required Major Courses (23 credits)

- EAPS 10500 - The Planets ♦ (satisfies Science for core)
- EAPS 11800 - Introduction To Earth Sciences ♦

- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences ♦
- EAPS 24300 - Earth Materials I
- EAPS 35300 - Earth Surface Processes
- EAPS 35400 - Plate Tectonics
- EAPS 44500 - Spacecraft Design

Skills Selective (3 credits)

- EAPS 30900 - Computer-Aided Analysis For Geosciences
- EAPS 57700 - Remote Sensing Of The Planets

EAPS Selective (3 credits)

- Choose an EAPS course not taken above.
- EAPS 10000:59900 - (could satisfy Science, Technology, & Society for core) - Credit Hours: 3.00

Planetary Science Selectives (9 credits)

Choose 9 credits from this list: Planetary Science Supplemental Information. One course cannot be used to meet both Major Course and Planetary Science Selective.

Other Departmental/Program Course Requirements (53-80 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ Labeled as a Science Core Selection in the four year plan of study

*Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two courses from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (4 credits)

- CS 17700 - Programming With Multimedia Objects ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one course from this list.

Laboratory Science (8 credits)

(satisfies Science for core)

- PHYS 17200 - Modern Mechanics ♦
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core; students should earn a minimum of a C-)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

Choose one.

- EAPS 31000 - Introductory Statistics For Geosciences
- STAT 30100 - Elementary Statistical Methods
- STAT 35000 - Introduction To Statistics
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods

Required Pre-Requisite Courses (16-18 credits)

- MA 26100 - Multivariate Calculus (Student should earn minimum of a C-)
- MA 26200 - Linear Algebra And Differential Equations

- CHM 11500 - General Chemistry or
- CHM 12500 - Introduction To Chemistry I

- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II

Electives (5-32 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- EAPS 11800 - Introduction To Earth Sciences ♦
- EAPS 13700 - Freshman Seminar In Earth, Atmospheric, And Planetary Sciences ♦
- CHM 11500 - General Chemistry ♦ or
- CHM 12500 - Introduction To Chemistry I ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection First-Year Composition - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 1st Year

- EAPS 10500 - The Planets ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- CHM 11600 - General Chemistry or
- CHM 12600 - Introduction To Chemistry II
- Science Core Selection Language & Culture - Credit Hours: 3.00

14-15 Credits

Fall 2nd Year

- EAPS 24300 - Earth Materials I
- MA 26100 - Multivariate Calculus
- PHYS 17200 - Modern Mechanics ♦
- Science Core Selection Language & Culture - Credit Hours: 3.00

15 Credits

Spring 2nd Year

- CS 17700 - Programming With Multimedia Objects
- MA 26200 - Linear Algebra And Differential Equations
- PHYS 27200 - Electric And Magnetic Interactions or
- PHYS 24100 - Electricity And Optics and PHYS 25200 - Electricity And Optics Laboratory
- Science Core Selection Language & Culture - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- EAPS 35300 - Earth Surface Processes
- Science Core Selection TWTP (COM 21700 strongly recommended) - Credit Hours: 3.00
- Science Core Selection General Education - Credit Hours: 3.00
- Planetary Science OR Skills Selective^ - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 3rd Year

- EAPS 35400 - Plate Tectonics
- EAPS 31000 - Introductory Statistics For Geosciences or
- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics or
- STAT 50300 - Statistical Methods For Biology or
- STAT 51100 - Statistical Methods
- Planetary Science or Skills Selective^ - Credit Hours: 3.00
- Science Core Selection General Education - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 4th Year

- EAPS Selective - Credit Hours: 3.00
- Planetary Science or Skills Selective^ - Credit Hours: 3.00
- Science Core Selection Multidisciplinary - Credit Hours: 3.00
- Elective - Credit Hours: 3.00 - 6.00

12-15 Credits

Spring 4th Year

- EAPS 44500 - Spacecraft Design
- Planetary Science or Skills Selective - Credit Hours: 3.00
- Science Core Selection Great Issues in Science - Credit Hours: 3.00
- Science Core Selection General Education - Credit Hours: 3.00
- Electives - Credit Hours 3.00

15 Credits

Notes

- ^Planetary Science Selectives for advanced courses and specializations
- 2.0 Graduation GPA required for Bachelor of Science degree

- 2.0 average in EAPS major courses required to graduate
- All courses, with the exception of Language & Culture, CS 17700, General Education, and Electives, must have a grade of C- or higher. All EAPS courses, regardless of area in plan of study, must have a grade of C- or higher.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Minor

Earth, Atmospheric, and Planetary Sciences Minor

Requirements for the Minor (18 credits)

Required Course (3 credits)

- EAPS 10900 - The Dynamic Earth or
- EAPS 11700 - Introduction To Atmospheric Science or
- EAPS 11800 - Introduction To Earth Sciences

Additional EAPS Coursework (15 credits)

- Two EAPS 10000-level or higher course - Credit Hours: 6.00
- Three EAPS 30000-level or higher courses - Credit Hours: 9.00

Notes

- No more than one 10000-level EAPS course and no more than one 20000-level EAPS course may be applied toward the minor requirements.
- Credit allowed in no more than one EAPS 30100, EAPS 32700, EAPS 37500, EAPS 36000, or EAPS 36400 towards minor requirements
- No credit allowed in any EAPS 19100, EAPS 39100, or EAPS 59100 towards minor requirements
- No more than three (3) credits of EAPS EAPS 49700 towards minor requirements
- All courses for this minor must be taken at Purdue University West Lafayette

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Department of Mathematics

Overview

The Department of Mathematics is one of seven departments making up Purdue's College of Science. The Department has an international reputation as an outstanding center for mathematics.

The Department offers Bachelor of Science and Doctor of Philosophy degrees. Bachelor of Science programs include Actuarial Science, Applied Mathematics, Core Mathematics, Data Science, Honors Mathematics, Mathematics and Computer Science, Mathematics for Business, Mathematics Education, and Mathematics and Statistics.

The Department will introduce a new degree plan. Data Science. A major in data science puts graduates at the forefront of an emerging field and prepares them for an exciting career at the intersection of computer science and statistics. Data Science is the interdisciplinary field of inquiry that uses quantitative and analytical methods to help gain insights and predictions based on big data. Students learn about key computational methods and statistical techniques and develop the deep analytical thinking skills needed to reason reliably, intelligently and creatively from data. The vast amounts of data generated every day has created a data-rich and data-driven world. The data science major opens pathways to careers in virtually every area of society, from healthcare, security and sustainability to education, business and economics.

The Department's 70 professors are actively involved in current developments in many major areas of mathematics. Faculty research interests can be found in the Faculty Research Areas list or in our Faculty directory.

Please explore our website or contact us directly for more information about our undergraduate or graduate programs, faculty, research, job opportunities or information on how to support us. The annual department newsletter, PURview, is a good place to read about Departmental news.

Department of Mathematics

Faculty

Contact Information

The Department's Main Office (Room 835 of the MATH building) is open from 8am to 5pm on all weekdays, except University holidays. The main office is closed from 12 to 1 p.m. in the summer. A phone number for the department is (765) 494-1901. The full address is:

Department of Mathematics
Purdue University
150 North University Street
West Lafayette, Indiana 47907-2067

Undergraduate Programs

Undergraduate Mathematics Information

Admissions Information (Includes application forms and online application)

Graduate Information

For Graduate Information please see Mathematics Graduate Program Information .

Baccalaureate

Actuarial Science Honors, BS

About the Program

Actuarial Science is a joint program of Mathematics and Statistics that emphasizes course work in Mathematics, Statistics, Economics, and Management. Students can prepare for four to five of the nine course exams to become an actuary and also will be eligible for all three VEEs (Validation by Educational Experience) upon successful completion of all required and recommended courses. In addition, students also earn a second major in Statistics and most also earn a minor in Management.

Actuarial Science Website

Actuarial Science Major Change (CODO) Requirements (Students must first CODO into Actuarial Science before Honors.)

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics

- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Requirements (51 credits)

Required Major Courses (51 credits)

- *Earn a cumulative GPA of at least 3.30.*
- *Earn at least a "B-" in each of the following classes: ECON 25100, ECON 25200, MGMT 31000, and MGMT 41100.*
- *Earn a minimum GPA of 3.5 in the following set of classes: STAT 41700, STAT 47201, STAT 47301, STAT 47901 (marked with a *).*
- *Earn grades of at least "B" in all of the MA and STAT classes in **Required Major Courses**.*
- *Earn a 2.50 GPA among required MA/STAT/MGMT/ECON classes in **Required Major Courses**.*
- *Pass the 2 SOA exams.*
- ECON 25100 - Microeconomics (satisfies General Education Option for College of Science Core)
- ECON 25200 - Macroeconomics (satisfies Behavioral/Social Science for core)
- MA 35100 - Elementary Linear Algebra
- MA 36600 - Ordinary Differential Equations
- MA 37300 - Financial Mathematics (satisfies Multidisciplinary Experience for College of Science Core)
- MGMT 20000 - Introductory Accounting
- MGMT 20100 - Management Accounting I
- MGMT 31000 - Financial Management
- MGMT 41100 - Investment Management - Honors Investment Management is required if offered.
- STAT 41700 - Statistical Theory *
- STAT 42000 - Introduction To Time Series
- STAT 47201 - Actuarial Models- Life Contingencies * (satisfies Team-Building & Collaboration for College of Science core)
- STAT 47301 - Introduction To Arbitrage-Free Pricing Of Financial Derivatives *
- STAT 47901 - Short Term Actuarial Models *
- STAT 51200 - Applied Regression Analysis
- MA 41600 - Probability or
- STAT 41600 - Probability

Program Requirement (0 credits)

Documentation of passing two exams given by the Society of Actuaries

- Exam 1 - Credit Hours: 0.00

- Exam 2 - Credit Hours: 0.00

Other Departmental Course Requirements (36-61 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CNIT 17500 - Visual Programming ♦ or
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - *fulfilled by ECON 25100 in major.*
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience

Fulfilled by MA 37300 in major.

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration

Fulfilled by STAT 47201 in major.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (8-33 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)

- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- ECON 25100 - Microeconomics
- MA 16100 - Plane Analytic Geometry And Calculus I + or
- MA 16500 - Analytic Geometry And Calculus I +
- College of Science Core First-Year Composition - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00
- Elective (MA 17000 or STAT 17000 strongly recommended) - Credit Hours: 2.00
- Elective (STAT 10100 or MA 10800 recommended) - Credit Hours: 1.00

16-18 Credits

Spring 1st Year

- MA 37300 - Financial Mathematics +
- CNIT 17500 - Visual Programming ♦ or
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00-4.00
- Elective - Credit Hours: 0.00-2.00

15-18 Credits

Fall 2nd Year

- ECON 25200 - Macroeconomics
- MGMT 20000 - Introductory Accounting
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00-4.00

16-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra
- MGMT 20100 - Management Accounting I
- MA 41600 - Probability or
- STAT 41600 - Probability
- Elective - Credit Hours: 2.00-3.00 (recommend STAT 25000)
- Elective - Credit Hours: 0-1.00

15 Credits

Fall 3rd Year

- MGMT 31000 - Financial Management
- STAT 41700 - Statistical Theory *
- STAT 47301 - Introduction To Arbitrage-Free Pricing Of Financial Derivatives *
- Science Core Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00

15-17 Credits

Spring 3rd Year

- MGMT 41100 - Investment Management - Honors Investment Management is required if offered.
- STAT 47901 - Short Term Actuarial Models *

- STAT 51200 - Applied Regression Analysis
- Science Core Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00

16-18 Credits

Fall 4th Year

- MA 36600 - Ordinary Differential Equations
- STAT 47201 - Actuarial Models- Life Contingencies *
- Great Issues In Science Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

16 Credits

Spring 4th Year

- STAT 42000 - Introduction To Time Series
- Elective - Credit Hours: 2.00 (STAT 47500 strongly recommended)
- Elective - Credit Hours: 10.00

15 Credits

Notes

+ Student should strive to earn a C or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Actuarial Science, BS

About the Program

Actuarial Science is a joint program of Mathematics and Statistics that emphasizes course work in Mathematics, Statistics, Economics, and Management. Students can prepare for four to five of the nine course exams to become an actuary and also will be eligible for all three VEEs (Validation by Educational Experience) upon successful completion of all required and recommended courses. In addition, students also earn a second major in Statistics and most also earn a minor in Management.

Actuarial Science Website

Actuarial Science Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major

2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Departmental/Program Major Courses (49 credits)

Required Major Courses

2.5 average GPA in **Required Major Courses**

- ECON 25100 - Microeconomics (satisfies General Education for College of Science core)
- ECON 25200 - Macroeconomics
- MA 35100 - Elementary Linear Algebra
- MA 36600 - Ordinary Differential Equations
- MA 37300 - Financial Mathematics (students SHOULD earn a C or better) (satisfies Multidisciplinary Experience for College of Science Core)
- MGMT 20000 - Introductory Accounting
- MGMT 20100 - Management Accounting I
- MGMT 31000 - Financial Management
- STAT 41700 - Statistical Theory
- STAT 42000 - Introduction To Time Series
- STAT 47201 - Actuarial Models- Life Contingencies (meets Teamwork for College of Science Core)
- STAT 47301 - Introduction To Arbitrage-Free Pricing Of Financial Derivatives
- STAT 47901 - Short Term Actuarial Models
- STAT 51200 - Applied Regression Analysis (students SHOULD earn a C or better)
- MA 41600 - Probability or
- STAT 41600 - Probability (students SHOULD earn a C or better)

Other Departmental/Program Course Requirements (39-67 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CNIT 17500 - Visual Programming ♦ or
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - *fulfilled by ECON 25100 in major.*
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience

Fulfilled by MA 37300 in major.

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration

Fulfilled by STAT 47201 in major.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (4-32 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- ECON 25100 - Microeconomics
- MA 16100 - Plane Analytic Geometry And Calculus I or

- MA 16500 - Analytic Geometry And Calculus I
- Science Core Freshman Composition - Credit hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 2.00 (MA 17000 or STAT 17000 strongly recommended)
- Elective - Credit Hours: 1.00 (MA 10800 or STAT 10100 strongly recommended)

16-17 Credits

Spring 1st Year

- MA 37300 - Financial Mathematics
- CNIT 17500 - Visual Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 0-2.00

15-18 Credits

Fall 2nd Year

- ECON 25200 - Macroeconomics
- MGMT 20000 - Introductory Accounting
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00

16-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra
- MGMT 20100 - Management Accounting I
- MA 41600 - Probability or
- STAT 41600 - Probability
- Elective (STAT 25000 Problem Solving In Probability recommended) - Credit Hours: 2.00-3.00
- Elective - Credit Hours: 0-1.00

15 Credits

Fall 3rd Year

- MGMT 31000 - Financial Management
- STAT 41700 - Statistical Theory
- STAT 47301 - Introduction To Arbitrage-Free Pricing Of Financial Derivatives
- Science Core Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00

15-17 Credits

Spring 3rd Year

- STAT 47901 - Short Term Actuarial Models
- STAT 51200 - Applied Regression Analysis
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective (MGMT 41100 Recommended) - Credit Hours: 3.00

16-18 Credits

Fall 4th Year

- MA 36600 - Ordinary Differential Equations
- STAT 47201 - Actuarial Models- Life Contingencies
- Science Core: Great Issues In Science - Credit Hours: 3.00
- Elective - Credit Hours: 4.00

15 Credits

Spring 4th Year

- STAT 42000 - Introduction To Time Series
- Elective - Credit Hours: 2.00 (STAT 47500 strongly recommended)
- Elective - Credit Hours: 10.00

15 Credits

Notes

- Students must earn a 2.5 average GPA in **Required Major Courses**
- 2.0 Graduation GPA required for Bachelor of Science degree.
- Students SHOULD strive to earn a "C" or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Applied Mathematics, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors are 40 students or less, and many upper-level classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business
- Mathematics
- Mathematics Teaching
- Mathematics with Computer Sciences
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

Mathematics Website

Applied Mathematics Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses

Required Major Courses (31 credits)

Average GPA in courses must be 2.00 in **Required Major Courses**.

- CS 31400 - Numerical Methods
- MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences
- MA 35100 - Elementary Linear Algebra (students SHOULD earn a B- or better)
- MA 35301 - Linear Algebra II
- MA 36600 - Ordinary Differential Equations
- MA 42500 - Elements Of Complex Analysis
- MA 42800 - Introduction To Fourier Analysis
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 45300 - Elements Of Algebra I or
- MA 45000 - Algebra Honors

Math/Statistics Selective (3 credits)

- MA 37500 - Introduction To Discrete Mathematics or
- MA 41600 - Probability or
- MA 44000 - Honors Real Analysis I or
- STAT 41600 - Probability or
- MA 44200 - Honors Real Analysis II or
- STAT 51600 - Basic Probability And Applications

Other Departmental/Program Course Requirements (39-67 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 - Science Writing And Presentation is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I

- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (students SHOULD earn B- or better) or
- MA 16500 - Analytic Geometry And Calculus I (students SHOULD earn B- or better)

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience

Fulfilled by CS 31400 in major.

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Courses (4-5 credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (22-50 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)

- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Freshman Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00 (MA 10800 - Mathematics As A Profession And A Discipline strongly recommended)
- Electives - Credit Hours: 4.00

15-18 Credits

Spring 1st Year

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 2.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00 (MA 30100 recommended)
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra +
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 3rd Year

- CS 31400 - Numerical Methods
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Spring 3rd Year

- MA 35301 - Linear Algebra II
- MA 36600 - Ordinary Differential Equations
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00 - 4.00

14-15 Credits

Fall 4th Year

- MA 42500 - Elements Of Complex Analysis

- MA 45300 - Elements Of Algebra I or
- MA 45000 - Algebra Honors
- Science Core Selection - Credit Hours: 3.00
- Great Issues In Science Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences
- MA 42800 - Introduction To Fourier Analysis
- Math/Statistics Selective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Note

- Average GPA in courses must be 2.00 in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- +Students should strive to earn a B- or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Data Science, BS (Mathematics)

Data science is one of the fastest-growing fields in the mathematical and computational sciences, with applications in almost every area of science, technology, and business. The Data Science track in Mathematics is designed to couple a foundation of mathematical training with the computational skills required to analyze large data sets to uncover and leverage predictive patterns and insights.

Graduates will have learned to process and analyze continuous and discrete data, quantify uncertainty, construct hypotheses, design and validate models, and to explain these steps and put results in context.

This major will open doors to Master's and Ph.D. programs in a variety of data-related fields and to a quickly-expanding range of careers in finance, industry, cybersecurity, medicine, and physical and social sciences.

Data Science (Mathematics) Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major

2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Degree Requirements

120 Credits Required

Data Science Major Courses (59-63 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ (satisfies Computing and Teambuilding for College of Science core)
- CS 18200 - Foundations Of Computer Science

- CS 19300 - Tools
- CS 25100 - Data Structures And Algorithms
- CS 38003 - Python Programming
- CS 49000 - Topics In Computer Sciences For Undergraduates - (Large Scale Data Analysis (LSDA))
- MA 35100 - Elementary Linear Algebra
- MA 37500 - Introduction To Discrete Mathematics
- MA 42100 - Linear Programming And Optimization Techniques
- MA 43200 - Elementary Stochastic Processes
- STAT 35500 - Statistics For Data Science
- CS 19100 - Freshman Resources Seminar or
- MA 10800 - Mathematics As A Profession And A Discipline
- CS 24200 - Introduction To Data Science or
- STAT 24200 - Introduction To Data Science
- CS 34800 - Information Systems or
- MA 34900 - Signals And Systems For Mathematicians
- CS 37300 - Data Mining And Machine Learning or
- MA 37400 - Mathematical Foundations For Machine Learning
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 41600 - Probability or
- STAT 41600 - Probability

Ethics Elective (3 credits)

Choose one option.

- ILS 23000 - Data Science And Society: Ethical Legal Social Issues
- PHIL 20700 - Ethics For Technology, Engineering, And Design
- PHIL 20800 - Ethics Of Data Science - (must be 3.00 Credit Hour option)

MA Elective (3 credits)

Choose one.

- MA 42800 - Introduction To Fourier Analysis
- MA 44200 - Honors Real Analysis II

CS Elective (3 credits)

Choose one.

- CS 31400 - Numerical Methods
- CS 38100 - Introduction To The Analysis Of Algorithms
- CS 47100 - Introduction to Artificial Intelligence

Statistics Elective (3 credits)

Choose one.

- STAT 41700 - Statistical Theory
- STAT 51200 - Applied Regression Analysis

Capstone (0-3 credits)

Choose one option below.

For-Credit Options:

- MA 49000 - Topics In Mathematics For Undergraduates (Data Science Capstone or Research Project In Data Science) - Credit Hours: 3.00
- STAT 49000 - Topics In Statistics For Undergraduates (Data Science Capstone or Research Project In Data Science) - Credit Hours: 3.00
- CS 49000 - Topics In Computer Sciences For Undergraduates - Introduction to Data Visualization (if taken after CS 37300; could not be used as CS Elective) - Credit Hours: 3.00
- CS 30700 - Software Engineering I
- CS 49700 - Honors Research Project
- EPCS 41100 - Senior Design Participation In EPICS
- EPCS 41200 - Senior Design Participation In EPICS

Zero-Credit Options:

- CS 38600 - Professional Practice IV or
- MA 38600 - Professional Practicum IV or
- STAT 38600 - Cooperative Work Experience IV
- CS 48700 - Professional Practice V or
- MA 48700 - Professional Practicum V or
- STAT 48700 - Cooperative Work Experience V
- CS 49000 Research Project in Data Science - Credit Hours: 0.00 or
- STAT 49000 Research Project in Data Science - Credit Hours: 0.00

Other Departmental/Program Course Requirements (29-49 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (Must have C or better to meet prerequisite for CS 18200) or
- MA 16500 - Analytic Geometry And Calculus I (Must have C or better to meet prerequisite for CS 18200)

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience

Met with required major coursework.

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with required major coursework.

Electives (8-32 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming
- CS 19300 - Tools
- MA 10800 - Mathematics As A Profession And A Discipline or
- CS 19100 - Freshman Resources Seminar
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00

16-18 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science *
- CS 38003 - Python Programming
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00

15-18 Credits

Fall 2nd Year

- STAT 35500 - Statistics For Data Science
- CS 24200 - Introduction To Data Science or
- STAT 24200 - Introduction To Data Science
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 3.00

14-18 Credits

Spring 2nd Year

- CS 25100 - Data Structures And Algorithms *
- MA 35100 - Elementary Linear Algebra
- ILS 23000 - Data Science And Society: Ethical Legal Social Issues ♦ or
- PHIL 20700 - Ethics For Technology, Engineering, And Design ♦ or
- PHIL 20800 - Ethics Of Data Science ♦ - (must be 3.00 Credit Hour option)
- MA 41600 - Probability or
- STAT 41600 - Probability
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 2.00

16-18 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- CS 37300 - Data Mining And Machine Learning or
- MA 37400 - Mathematical Foundations For Machine Learning
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- STAT 41700 - Statistical Theory or
- STAT 51200 - Applied Regression Analysis
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-16 Credits

Spring 3rd Year

- CS 49000 - Topics In Computer Sciences For Undergraduates - (Large Scale Data Analysis)
- MA 37500 - Introduction To Discrete Mathematics
- CS 34800 - Information Systems or
- MA 34900 - Signals And Systems For Mathematicians
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Fall 4th Year

- MA 42100 - Linear Programming And Optimization Techniques
- MA 43200 - Elementary Stochastic Processes
- CS 31400 - Numerical Methods or
- CS 38100 - Introduction To The Analysis Of Algorithms or
- CS 47100 - Introduction to Artificial Intelligence

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16-17 Credits

Spring 4th Year

- MA 42800 - Introduction To Fourier Analysis or
- MA 44200 - Honors Real Analysis II
- Capstone Experience/Course - Credit Hours: 0.00 - 3.00

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

13-18 Credits

Notes

- A minimum of 32 semester credits of upper level (30000+) required
- 2.0 Major and Graduation GPA required for Bachelor of Science degree.
- *All CS and MA and STAT courses required for the major, must be completed with a grade of "C" or better.
- *All prerequisites to MA and CS and STAT courses required for the major, regardless of department, must be completed with a grade of "C" or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Mathematics Education, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors have 40 or fewer students, and many upper-level classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue a double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business
- Mathematics
- Mathematics Teaching
- Mathematics with Computer Science
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

Mathematics Website

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click here.

Departmental/Program Major Courses (87-91 credits)

Required Major Courses (43-47 credits)

CONTENT COURSES

Average GPA in courses must be 2.50 or higher in **Required Major Courses**. (higher of grade between STAT 35000 and MA 48400 is used)

- MA 35100 - Elementary Linear Algebra (student SHOULD earn a B- or better)
- MA 36600 - Ordinary Differential Equations
- MA 37500 - Introduction To Discrete Mathematics
- MA 46000 - Geometry
- MA 48400 - Seminar On Teaching College Algebra And Trigonometry

- STAT 31100 - Introductory Probability
- STAT 35000 - Introduction To Statistics ♦
- MA 30100 - An Introduction To Proof Through Real Analysis or
- MA 34100 - Foundations Of Analysis
- MA 45000 - Algebra Honors or
- MA 45300 - Elements Of Algebra I
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Calculus I Option

- MA 16100 - Plane Analytic Geometry And Calculus I (student SHOULD earn a B- or better) or
- MA 16500 - Analytic Geometry And Calculus I (student SHOULD earn a B- or better)

Calculus II Option

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Professional Education Course Requirements (44 credits)

Average GPA in courses must be 3.00 - no grade lower than C-

- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 20500 - Exploring Teaching As A Career *(2 credits required)*
- EDCI 22550 - Mathematics Education Seminar
- EDCI 27000 - Introduction To Educational Technology And Computing *(1 credit required)*
- EDCI 28500 - Multiculturalism And Education *(2 credits required)*
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems *(1 credit required)*
- EDCI 35000 - Community Issues & Applications For Educators *(1 credit required)*
- EDCI 37001 - Teaching And Learning English As A New Language *(2 credits required)*
- EDCI 42500 - Teaching Of Secondary Mathematics - Methods I
- EDCI 42600 - Teaching Of Secondary Mathematics - Methods II
- EDCI 49800 - Supervised Teaching *(12 credits required)*
- EDPS 23500 - Learning And Motivation *(2 credits required)*
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 26501 - The Inclusive Classroom

- EDPS 32700 - Classroom Assessment (*1 credit required*)
- EDPS 36201 - Positive Behavioral Supports (*2 credits required*)
- EDPS 43010 - Secondary Creating And Managing Learning Environments (*2 credits required*)
- EDST 20010 - Educational Policies And Laws (*1 credit required*)

Learner Pathway Selective (Choose one.)

- EDCI 51900 - Teaching English Language Learners
- EDCI 52600 - Language Study For Educators
- EDCI 55900 - Academic Language And Content Area Learning
- EDPS 21100 - Special Education Law, Policy, And Ethical Guidelines
- EDPS 54200 - Curriculum And Program Development In Gifted Education
- EDPS 54500 - Social And Affective Development Of Gifted Students

Other Departmental/Program Course Requirements (21-45 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition

Met with EDCI 20500 in major.

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I - *met with EDCI 28500 in major*
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - *met with EDPS 23500 in major.*
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics

Met with required major coursework.

Multidisciplinary Experience

Met with EDCI 42500 in major.

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with EDCI 49800 in major.

Electives (0-14 credits)

Optional Concentration

K-12 Integrated STEM Optional Concentration for Education

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)

- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- EDCI 20500 - Exploring Teaching As A Career
- EDST 20010 - Educational Policies And Laws
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection (Language & Culture) - Credit Hours: 4.00
- Elective (MA 10800 strongly recommended) - Credit Hours: 1.00
- Elective - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 1st Year

- EDCI 22550 - Mathematics Education Seminar
- EDCI 28500 - Multiculturalism And Education
- EDCI 35000 - Community Issues & Applications For Educators
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection (Technical Writing/Technical Presentation) - Credit Hours: 3.00 - 4.00

- Science Core Selection (General Education) - Credit Hours: 3.00 - 4.00

14-17 Credits

Fall 2nd Year

- EDCI 20002 - Special Populations Seminar: English Language Learners And Students With Gifts And Talents
- EDCI 37001 - Teaching And Learning English As A New Language
- EDPS 24000 - Children With Gifts, Creativity, And Talents
- EDPS 36201 - Positive Behavioral Supports
- MA 46000 - Geometry
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection (Science Laboratory) - Credit Hours: 3.00 - 4.00

16-18 Credits

Spring 2nd Year

- EDCI 20001 - Special Populations Seminar: Focus On Students With Disabilities And Differentiation Approaches
- EDPS 23500 - Learning And Motivation
- EDPS 24800 - Differentiating Curriculum And Instruction
- EDPS 26501 - The Inclusive Classroom
- MA 37500 - Introduction To Discrete Mathematics
- STAT 31100 - Introductory Probability
- Science Core Selection (Laboratory Science) - Credit Hours: 3.00 - 4.00

15-16 Credits

Fall 3rd Year

- EDCI 27000 - Introduction To Educational Technology And Computing
- EDCI 30900 - Reading In Middle And Secondary Schools: Methods And Problems
- MA 35100 - Elementary Linear Algebra
- CS 15900 - C Programming or
- CS 17700 - Programming With Multimedia Objects or
- CS 18000 - Problem Solving And Object-Oriented Programming
- MA 30100 - An Introduction To Proof Through Real Analysis or
- MA 34100 - Foundations Of Analysis
- Learner Specialty Pathway Course - Credit Hours: 3.00
- Science Core Selection (Language & Culture) - Credit Hours: 3.00

17-18 Credits

Spring 3rd Year

- EDCI 42500 - Teaching Of Secondary Mathematics - Methods I
- MA 36600 - Ordinary Differential Equations
- STAT 35000 - Introduction To Statistics
- Science Core Selection (Great Issues) - Credit Hours: 3.00
- Science Core Selection (General Education) - Credit Hours: 3.00

16 Credits

Fall 4th Year

- EDCI 42600 - Teaching Of Secondary Mathematics - Methods II
- EDPS 32700 - Classroom Assessment
- EDPS 43010 - Secondary Creating And Managing Learning Environments
- MA 48400 - Seminar On Teaching College Algebra And Trigonometry
- MA 45000 - Algebra Honors or
- MA 45300 - Elements Of Algebra I
- Science, Technology, Society Course - Credit Hours: 3.00

15-16 Credits

Spring 4th Year

- EDCI 49800 - Supervised Teaching

12 Credits

Notes

- Average GPA in courses must be 2.50 or higher in **Required Major Courses (MATH/STAT/CS CONTENT COURSES)**
- Average GPA in courses must be 3.00 or higher in **Required Major Courses (EDUCATIONAL CONTENT)**
- 2.5 Graduation GPA required for Bachelor of Science degree.
- For Licensing - Students must pass GATE C

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).

- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Mathematics Honors, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors have 40 or fewer students, and many upper-level classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue a double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business

- Mathematics
- Mathematics Teaching
- Mathematics with Computer Science
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

Mathematics Website

Mathematics Major Change (CODO) Requirements (Students must CODO to Mathematics before Mathematics Honors.)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science

- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses

Required Major Courses (28 credits)

Average GPA in courses must be 3.50 or higher in **Required Major Courses** AND an average GPA in required MA 44000, MA 44200 and MA 45000 must be 3.50 or higher.

- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 35100 - Elementary Linear Algebra (students SHOULD earn a B- or better)
- MA 35301 - Linear Algebra II
- MA 36600 - Ordinary Differential Equations
- MA 42500 - Elements Of Complex Analysis
- MA 45000 - Algebra Honors

MA Selectives (9 credits)

- Choose 9 credit hours.
- No more than two courses from any one group.
- If student takes MA 34100, he or she must take MA 44000 for this MA Selective.
- And/or if student takes MA 36200 or MA 51000, he or she must take MA 44200 for this MA Selective.

Analysis

- MA 42800 - Introduction To Fourier Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II

Computer Science

- CS 24000 - Programming In C
- CS 25100 - Data Structures And Algorithms

Discrete Mathematics, Foundations

- CS 38100 - Introduction To The Analysis Of Algorithms
- CS 48300 - Introduction To The Theory Of Computation
- MA 37500 - Introduction To Discrete Mathematics
- MA 38500 - Introduction To Logic

Numerical Analysis

- CS 31400 - Numerical Methods
- CS 51400 - Numerical Analysis
- CS 51500 - Numerical Linear Algebra
- CS 51501 - Parallelism In Numerical Linear Algebra
- CS 52000 - Computational Methods In Optimization

Statistics, Probability

- MA 41600 - Probability
- MA 43200 - Elementary Stochastic Processes
- STAT 41600 - Probability
- STAT 41700 - Statistical Theory
- STAT 51600 - Basic Probability And Applications
- STAT 51700 - Statistical Inference
- STAT 51900 - Introduction To Probability

Approved for MATH/MAED dual majors ONLY

The course is repeatable, but only allowed once for degree requirements.

- MA 48400 - Seminar On Teaching College Algebra And Trigonometry

Approved for MATH/PHYS dual majors ONLY

This option is a possibility for MATH/PHYS dual majors only. Students must meet qualifications per the Physics department to take these courses.

- PHYS 60000 - Methods Of Theoretical Physics I
- PHYS 60100 - Methods Of Theoretical Physics II

Other Departmental/Program Course Requirements (39-67 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or (students SHOULD earn a B- or better)
- MA 16500 - Analytic Geometry And Calculus I (students SHOULD earn a B- or better)

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (25-53 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I + or
- MA 16500 - Analytic Geometry And Calculus I +
- Science Core Freshman Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (MA 10800 strongly recommended)
- Electives - Credit Hours: 4.00

15-18 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 5.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 5.00 (MA 30100 recommended)

15-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra +
- MA 36600 - Ordinary Differential Equations
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-17 Credits

Fall 3rd Year

- MA 42500 - Elements Of Complex Analysis
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I (*requires MA 35301 - students with calculus credit prior to beginning at Purdue may work with their advisor to alter their plan to meet pre-requisites for MA 44000 in Fall junior year. Students beginning in Calculus I first semester should plan to take MA 44000 in a later fall semester.*)
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 2.00

15-17 Credits

Spring 3rd Year

- MA 35301 - Linear Algebra II
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- MA 44000 - Honors Real Analysis I (if not taken in place of MA 34100) OR MA Selective - Credit Hours: 3.00
- MA 45000 - Algebra Honors
- Science Core Selection - Credit Hours: 3.00
- Great Issues In Science Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-18 Credits

Spring 4th Year

- MA 44200 - Honors Real Analysis II
(requires MA 35301)
- MA Selective - Credit Hours: 3.00 - 6.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 0.00 - 3.00

15 Credits

Notes

- Average GPA in courses must be 3.50 or higher in **Required Major Courses**.
- Average GPA in MA 44000, MA 44200 and MA 45000 must be 3.50 or higher.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Student should strive to earn a B- or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin

PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	
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Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Mathematics, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors have 40 or fewer students, and many upper-level classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue a double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business
- Mathematics
- Mathematics Teaching
- Mathematics with Computer Science
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

[Mathematics Website](#)

[Mathematics Major Change \(CODO\) Requirements](#)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses

Required Major Courses (28 credits)

Average GPA in courses must be 2.00 or higher in **Required Major Courses**.

- MA 35100 - Elementary Linear Algebra +
- MA 35301 - Linear Algebra II
- MA 36600 - Ordinary Differential Equations
- MA 42500 - Elements Of Complex Analysis
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 45300 - Elements Of Algebra I or
- MA 45000 - Algebra Honors

Math Selective (9 credits)

No more than two courses in any one category.

Analysis

- MA 42800 - Introduction To Fourier Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II

Computer Science

- CS 24000 - Programming In C
- CS 25100 - Data Structures And Algorithms

Discrete Mathematics, Foundations

- CS 38100 - Introduction To The Analysis Of Algorithms
- CS 48300 - Introduction To The Theory Of Computation
- MA 37500 - Introduction To Discrete Mathematics
- MA 38500 - Introduction To Logic

Numerical Analysis

- CS 31400 - Numerical Methods
- CS 51400 - Numerical Analysis
- CS 51500 - Numerical Linear Algebra
- CS 51501 - Parallelism In Numerical Linear Algebra
- CS 52000 - Computational Methods In Optimization

Statistics, Probability

- MA 41600 - Probability
- MA 43200 - Elementary Stochastic Processes

- STAT 41600 - Probability
- STAT 41700 - Statistical Theory
- STAT 51600 - Basic Probability And Applications
- STAT 51700 - Statistical Inference
- STAT 51900 - Introduction To Probability

Allowed for MATH/MAED dual majors ONLY

The course is repeatable, but only allowed once for degree requirements.

- MA 48400 - Seminar On Teaching College Algebra And Trigonometry

Allowed for MATH/PHYS dual majors ONLY

This option is a possibility for MATH/PHYS dual majors only. Students must meet qualifications per the Physics department to take these courses.

- PHYS 60000 - Methods Of Theoretical Physics I
- PHYS 60100 - Methods Of Theoretical Physics II

Other Departmental/Program Course Requirements (39-67 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (25-53 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I + or
- MA 16500 - Analytic Geometry And Calculus I +

- Science Core Freshman Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (MA 10800 strongly recommended)
- Elective - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 5.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00 (MA 30100 recommended)
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra +
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 3.00

15 Credits

Fall 3rd Year

- MA 36600 - Ordinary Differential Equations
- MA 34100 - Foundations Of Analysis or

- MA 44000 - Honors Real Analysis I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 5.00

15-16 Credits

Spring 3rd Year

- MA 35301 - Linear Algebra II
- Math Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 6.00

15-16 Credits

Fall 4th Year

- MA 42500 - Elements Of Complex Analysis
- MA 45300 - Elements Of Algebra I or
- MA 45000 - Algebra Honors
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Great Issues In Science Option - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 0.00 - 3.00

15-18 Credits

Spring 4th Year

- Math Selective - Credit Hours: 3.00
- Math Selective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Notes

- Average GPA in courses must be 2.00 or higher in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Students should strive to earn a B- or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Mathematics/Business, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors have 40 or fewer students, and many upper-level classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue a double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business
- Mathematics
- Mathematics Teaching
- Mathematics with Computer Science
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

Mathematics Website

Mathematics/Business Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (40-43 credits)

Required Major Courses (25 credits)

Average GPA in courses must be 2.00 or higher in **Required Major Courses**.

- MA 35100 - Elementary Linear Algebra (student SHOULD earn a B- or better)
- MA 35301 - Linear Algebra II
- MA 36600 - Ordinary Differential Equations
- MA 37300 - Financial Mathematics
- STAT 51200 - Applied Regression Analysis
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 41600 - Probability or
- STAT 41600 - Probability or
- STAT 51600 - Basic Probability And Applications
- MA 43200 - Elementary Stochastic Processes or
- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference

Minor Requirement (15-18 credits)

Students must earn a minor in **ECONOMICS, BUSINESS ECONOMICS or MANAGEMENT** to complete the major.

Other Departmental/Program Course Requirements (39-67 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (6 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I - *Met with required minor course*
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (student SHOULD earn a B- or better) or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (10-41 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I + or
- MA 16500 - Analytic Geometry And Calculus I +
- Science Core Freshman Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (MA 10800 strongly recommended)
- Electives - Credit Hours: 3.00 - 5.00

16-17 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 5.00

15 Credits

Fall 2nd Year

- MA 37300 - Financial Mathematics

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Minor Course Selection - Credit Hours: 3.00 - 4.00
- Elective Credit Hours: 0-2.00

15-16 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra +
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Minor Course Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 41600 - Probability or
- STAT 41600 - Probability or
- STAT 51600 - Basic Probability And Applications
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-18 Credits

Spring 3rd Year

- MA 35301 - Linear Algebra II
- Minor Course Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- MA 36600 - Ordinary Differential Equations

- MA 43200 - Elementary Stochastic Processes or
- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference
- Minor Course Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Great Issues Option - Credit Hours: 3.00

16-17 Credits

Spring 4th Year

- STAT 51200 - Applied Regression Analysis
- Minor Course Selection - Credit Hours: 3.00
- Minor Course Selection or Elective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Notes

- Average GPA in courses must be 2.00 or higher in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Students should strive to earn a B- or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Mathematics/Computer Science, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors have 40 or fewer students, and many upper-level classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue a double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business
- Mathematics
- Mathematics Teaching
- Mathematics with Computer Science
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

Mathematics Website

Mathematics/Computer Science Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses

Required Major Courses (31 credits)

Average GPA in courses must be 2.00 or higher in **Required Major Courses**.

- CS 24000 - Programming In C
- CS 25100 - Data Structures And Algorithms
- CS 31400 - Numerical Methods
- MA 35100 - Elementary Linear Algebra (student SHOULD earn a B- or better)
- MA 36600 - Ordinary Differential Equations
- MA 37500 - Introduction To Discrete Mathematics

MACS Math Selective (6 credits)

Choose two.

- MA 35301 - Linear Algebra II
- MA 38500 - Introduction To Logic
- MA 45000 - Algebra Honors
- MA 45300 - Elements Of Algebra I

CS Selective (3 credits)

Choose one.

- CS 33400 - Fundamentals Of Computer Graphics
- CS 37300 - Data Mining And Machine Learning
- CS 38100 - Introduction To The Analysis Of Algorithms
- CS 48300 - Introduction To The Theory Of Computation
- CS 51400 - Numerical Analysis
- CS 51500 - Numerical Linear Algebra
- CS 52000 - Computational Methods In Optimization

MA/STAT Selective (3 credits)

Choose one.

- MA 34100 - Foundations Of Analysis
- MA 36200 - Topics In Vector Calculus
- MA 42500 - Elements Of Complex Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II
- MA 45000 - Algebra Honors
- STAT 42000 - Introduction To Time Series
- MA 41600 - Probability or
- STAT 41600 - Probability

Other Departmental/Program Course Requirements (39-66 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (4 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (student SHOULD earn a B- or better) or
- MA 16500 - Analytic Geometry And Calculus I (student SHOULD earn a B- or better)

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (23-50 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)

- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I + or
- MA 16500 - Analytic Geometry And Calculus I +
- Science Core Freshman Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (MA 10800 strongly recommended)
- Electives - Credit Hours: 4.00

15-18 Credits

Spring 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 4.00

15-17 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or

- MA 27101 - Honors Multivariate Calculus
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 2.00

15-17 Credits

Spring 2nd Year

- MA 35100 - Elementary Linear Algebra +
- MA 37500 - Introduction To Discrete Mathematics (used as CS 18200 pre-requisite)
- COM 21700 - Science Writing And Presentation
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- CS 24000 - Programming In C
- MA 36600 - Ordinary Differential Equations
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 2.00

15-16 Credits

Spring 3rd Year

- CS 25100 - Data Structures And Algorithms
- MA 35301 - Linear Algebra II or
- MA 38500 - Introduction To Logic or
- MA 45000 - Algebra Honors or
- MA 45300 - Elements Of Algebra I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- CS 31400 - Numerical Methods or

- MA 51400 - Numerical Analysis
- MA 35301 - Linear Algebra II or
- MA 38500 - Introduction To Logic or
- MA 45000 - Algebra Honors or
- MA 45300 - Elements Of Algebra I
- Great Issue Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- MA/STAT Selective - Credit Hours: 3.00
- CS Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00 - 6.00

15-18 Credits

Notes

- Average GPA in courses must be 2.00 or higher in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Students should strive to earn a B- or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Mathematics/Statistics, BS

About the Program

Math students enjoy a great deal of personal attention. Most math classes for math majors are 40 students or less, and many upperlevel classes have fewer than 25 students. In addition, the math curriculum is flexible enough that students can take classes in other interest areas or pursue double major or a minor without too much difficulty. Math specializations include:

- Applied Mathematics
- Mathematics / Business
- Mathematics
- Mathematics Teaching
- Mathematics with Computer Sciences
- Mathematics with Statistics

Important note: When applying for any specialization within Mathematics, select "Mathematics" as your major. You will have the opportunity to specialize as you progress through the curriculum.

Mathematics Website

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

1. Major
2. Science Core Curriculum
3. Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses

Required Major Courses (30-31 credits)

Average GPA in courses must be 2.00 in **Required Major Courses**.

- MA 35100 - Elementary Linear Algebra (students SHOULD earn a B- or better)
- MA 35301 - Linear Algebra II
- MA 42500 - Elements Of Complex Analysis
- STAT 51200 - Applied Regression Analysis
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- STAT 35000 - Introduction To Statistics ♦ (satisfies Statistics Requirement for College of Science Core) or
- STAT 35500 - Statistics For Data Science ♦ (satisfies Statistics Requirement for College of Science Core)
- MA 41600 - Probability or
- STAT 41600 - Probability or
- STAT 51600 - Basic Probability And Applications or
- IE 23000 - Probability And Statistics In Engineering I
- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference

Advanced MA Selective (3-4 credits)

Choose one below.

- MA 36600 - Ordinary Differential Equations
- MA 37500 - Introduction To Discrete Mathematics
- MA 42800 - Introduction To Fourier Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II
- MA 45000 - Algebra Honors
- MA 45300 - Elements Of Algebra I

STAT Selective (3 credits)

Choose one below.

- IE 53000 - Quality Control
- MA 43200 - Elementary Stochastic Processes (Cross-listed with STAT 43200)
- STAT 29000 - Topics In Statistics For Undergraduates (Big Data Analysis 3 credits)
- STAT 42000 - Introduction To Time Series
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments
- CS 37300 - Data Mining And Machine Learning (Data Science, Computer Science, Computer Science Honors majors only)

One three credit combination of the following courses with the titles below can be used for ONE STAT selective:

- STAT 19000 Data Mine I and II
- STAT 29000 Data Mine III and IV

- STAT 39000 Data Mine V and VI
- STAT 49000 Data Mine VII and VIII

Other Departmental/Program Course Requirements (36-64 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (student SHOULD earn a B- or better) or
- MA 16500 - Analytic Geometry And Calculus I (student SHOULD earn a B- or better)

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (25-54 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)

- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I + or
- MA 16500 - Analytic Geometry And Calculus I +
- Science Core Freshman Composition - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (MA 10800 strongly recommended)
- Electives - Credit Hours: 4.00-5.00

16-17 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 2.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 5.00 (MA 30100 recommended)

15-17 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra +
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00
- Electives - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 41600 - Probability or
- STAT 41600 - Probability or
- STAT 51600 - Basic Probability And Applications or
- IE 23000 - Probability And Statistics In Engineering I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference
- Advanced MA Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- MA 42500 - Elements Of Complex Analysis
- STAT 51200 - Applied Regression Analysis
- Great Issues Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Electives - Credit Hours: 3.00

15 Credits

Spring 4th Year

- MA 35301 - Linear Algebra II
- STAT Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00-4.00
- Electives - Credit Hours: 3.00

15-17 Credits

Notes

- Average GPA in courses must be 2.00 in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- Students should strive to earn a B- or better.
- Credit should be allowed in no more than one of STAT 30100, STAT 35000, STAT 50100, and in no more than one of STAT 50300 and 51100.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
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- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

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World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Minor

Mathematics Minor

The Mathematics Minor provides a strong background in mathematics for students majoring in some other discipline.

Requirements for the Minor (12-13 credits)

- Before undertaking this minor, the student must establish the prerequisites for the required minor courses.
- ALL COURSES REQUIRED FOR THIS MINOR MUST BE TAKEN AT PURDUE UNIVERSITY
- To qualify for the minor, courses must be completed with a C- or better (pass/no pass grade option is not allowed for the minor).
- The three courses used for Areas 2 and 3 cannot all be from the same group

Area 1 - Choose One (3 credits)

- MA 35100 - Elementary Linear Algebra
- MA 26500 - Linear Algebra (must be completed with a B- or better) *
- MA 35301 - Linear Algebra II (recommended for students with TR or CR for MA 26500)

Area 2 - Choose One (3 credits)

The three courses used for Areas 2 and 3 cannot all be from the same group

Algebra

- MA 45300 - Elements Of Algebra I
- MA 45000 - Algebra Honors

Analysis

- MA 34100 - Foundations Of Analysis
- MA 44000 - Honors Real Analysis I

Area 3 - Choose Two (6-7 credits)

The three courses used for Areas 2 and 3 cannot all be from the same group

Algebra

- MA 45000 - Algebra Honors
- MA 45300 - Elements Of Algebra I

Analysis

- MA 30100 - An Introduction To Proof Through Real Analysis
- MA 34100 - Foundations Of Analysis
- MA 36200 - Topics In Vector Calculus
- MA 42500 - Elements Of Complex Analysis
- MA 42800 - Introduction To Fourier Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II

Computer Science

- CS 24000 - Programming In C or
- ECE 26400 - Advanced C Programming
- CS 25100 - Data Structures And Algorithms or
- ECE 36800 - Data Structures

Differential Equations

Only one differential equations course can be used in AREA 3.

- MA 36600 - Ordinary Differential Equations or
- MA 26600 - Ordinary Differential Equations (must be completed with a B- or better)** or
- MA 30300 - Differential Equations And Partial Differential Equations For Engineering And The Sciences

Discrete Mathematics, Foundation

- CS 38100 - Introduction To The Analysis Of Algorithms
- CS 48300 - Introduction To The Theory Of Computation
- MA 37500 - Introduction To Discrete Mathematics
- MA 38500 - Introduction To Logic

Linear Algebra

- MA 35301 - Linear Algebra II

Numerical Analysis

- CS 31400 - Numerical Methods
- CS 51400 - Numerical Analysis
- CS 51500 - Numerical Linear Algebra
- CS 52000 - Computational Methods In Optimization

Statistics, Probability

Only one statistics, probability course can be used in AREA 3.

- MA 41600 - Probability or
- STAT 41600 - Probability or
- STAT 41700 - Statistical Theory or
- STAT 51600 - Basic Probability And Applications or
- STAT 51900 - Introduction To Probability

Notes

- No substitutions are allowed.
- A course can only be used in one area.
- *For many students, MA 26500 may not be adequate preparation for upper division mathematics classes. Students planning a Mathematics Minor should consider taking MA 35100 instead. Only students with a very firm grasp of the MA 26500 material (and a grade of B- or better) should contemplate taking MA 35301 without MA 35100.
- ** MA 26600 with at least a "B-" can be used in place of MA 36600 (only one of MA 26600/MA 36600/MA 30300 can be used in Area 3). MA 26200 will not be accepted for the minor.

Disclaimer

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Pre-Program

Data Science First Year (MA)

Data Science First Year

Program Requirements (25-28 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ * (satisfies Computing and Teambuilding for College of Science core)
- CS 18200 - Foundations Of Computer Science *
- CS 19300 - Tools
- CS 38003 - Python Programming
- CS 19100 - Freshman Resources Seminar or
- MA 10800 - Mathematics As A Profession And A Discipline
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 4.00

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ *
- CS 19300 - Tools
- CS 19100 - Freshman Resources Seminar or
- MA 10800 - Mathematics As A Profession And A Discipline
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 3.00

16-18 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science *
- CS 38003 - Python Programming
- MA 16600 - Analytic Geometry And Calculus II or
- MA 16200 - Plane Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00

14-17 Credits

Notes

- * All CS core courses and all track requirements, regardless of department, must be completed with a grade of "C" or better.
- All prerequisites to CS core courses and track requirements, regardless of department, must be completed with a grade of "C" or better.

Department of Physics and Astronomy

Overview

The Department of Physics and Astronomy serves the citizens of Indiana, the United States and the world through discovery that expands knowledge in the field of physics and closely related sciences, through conveyance of this knowledge to our students in an excellent learning environment, and through engagement in which we share our skills, knowledge, and enthusiasm with diverse communities beyond the University.

At present we have 60 faculty members, 22 postdocs and research scientists, 154 graduate students, and 231 undergraduate physics majors. These individuals conduct research across a broad spectrum of physics:

Accelerator mass spectrometry
Applied physics, experimental
Astrophysics, experimental and theoretical
Atomic, molecular, and optical (AMO) physics, experimental and theoretical
Biophysics, experimental and theoretical
Condensed matter physics, experimental and theoretical
Geophysics, experimental
High energy nuclear physics, experimental and theoretical
High energy particle physics, experimental and theoretical
Physics education
Planetary physics
Quantum Information Science

Our faculty members are recognized as world leaders in their respective fields. Included in our ranks are a member of the National Academy of Sciences, a member of the national academy of engineering, a winner of the Hamburg Prize for Theoretical Physics, the immediate past president of the National Association for Research in Science Teaching, 3 AAAS fellows, and 10 APS fellows.

On campus, the department occupies two buildings, the "Physics Building" (originally named the Charles Benedict Stuart Laboratory of Applied Physics) and an attached two-story subterranean laboratory complex containing offices, work rooms, and laboratories dedicated to accelerator mass spectrometry, the Purdue Rare Isotope Measurement Laboratory (PRIME Lab). We also make use of campus facilities in Purdue's Discover Park, particularly the Birck Nanotechnology Center and the Bindley Bioscience Center. Off campus, we participate in research that occurs at the Large Hadron Collider at CERN, Argonne National Laboratory, Brookhaven National Laboratory, Fermilab, the Stanford Linear Accelerator, and several observatories around the globe.

Our department has undergraduate programs in Physics, Honors Physics, Applied Physics, Applied Honors Physics, and Physics Teaching. We also have undergraduate minors in both Astronomy and Physics. Our graduate program offers both M.S. and PH.D. Degrees with a wide variety of specializations.

All physics major students must complete the majority of upper level (300 level and above) physics courses in residence at Purdue. Students can use transfer credits for no more than 50 percent of the upper level physics courses in order to receive a Physics and Astronomy B.S. Degree.

Through our outreach programs we bring our love of physics to thousands of elementary and high school students and their teachers every year. Classroom visits are complete with demonstrations hands-on learning activities. Teachers receive high-quality, content-based professional development in our workshops and through summer research opportunities.

Department of Physics and Astronomy Website

Faculty

Contact Information

Mailing Address

Department of Physics and Astronomy
525 Northwestern Avenue
West Lafayette, IN 47907-2036

Telephone and Fax

(765) 494-3000 (main office)
(765) 494-2970 (undergraduate office)
(765) 494-0706 (fax)

Department directory

General questions

physcontacts@purdue.edu

Graduate Information

For Graduate Information please see Physics and Astronomy Graduate Program Information.

Baccalaureate

Applied Physics Honors, BS

About the Program

Purdue physics is an internationally recognized department for excellence in forefront research and undergraduate and graduate education. Our undergraduate classes for physics majors average 30 or fewer students and are taught by professors actively engaged in forefront research. Undergraduate research is strongly encouraged and opportunities exist as early as the second semester to work in a research group. These groups include experimental and theoretical condensed matter physics, high energy physics, nano-physics, nuclear physics, astrophysics, biological physics, geophysics, relativity, and interdisciplinary areas of material science, engineering, or computational science.

The department also helps undergraduates with external internships, particularly for the summers. Upon graduation our students are accepted for graduate programs at many of the top universities and are also sought after for positions in industry, particularly

high-tech positions. Our graduates have an exceptional record of career accomplishment in a wide variety of settings, including academia and major industrial and government labs.

The specialties under the applied physics curriculum can range from different areas. Individually tailored specialties may be chosen by the student in consultation with an advisor. Currently available specialties include:

- Geophysics and Atmospheric Sciences
- Astrophysics
- Computational Physics
- Nuclear Physics
- Material Science & Engineering
- Chemical Engineering
- Aeronautical & Astronautical Engineering
- Industrial Engineering
- Electrical and Computer Engineering
- Mechanical Engineering
- Medical Physics

In addition, many physics majors manage to complete dual or multiple major programs within the College of Science. This is possible because of a considerable overlap of the College of Science requirements. Popular dual majors with physics are: mathematics, computer science and chemistry.

The following stipulations need to be met in order to be in, stay in and graduate in the Honors or Applied Honors Program:

- No D+ or worse grade is allowed in any course for a student to stay in the Honors Programs.
- No more than one C range grade is allowed in all physics courses taken for a student to graduate with Honor. Note that a course can be re-taken for the purpose of satisfying this guideline.
- Both the physics AND overall GPAs of 3.0 or better are required for a student to graduate with Honor.
- All the core courses (PHYS 17200, 27200, 30600, 30700, 34400, 34000, and 42200) be complete with a B or better.
- Students need to petition to Undergraduate Committee for exceptions or requests.

Physics Website

Physics Major Change (CODO) Requirements (Students must CODO into Physics before Honors.)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.

- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Applied Physics Honors Major Courses (68-69 credits)

Required Major Courses (44-45 credits)

- PHYS 17200 - Modern Mechanics ♦ (satisfies Science for core) (satisfies Teambuilding for College of Science core)

Physics Majors are required to take the honors sections of PHYS 17200 in the fall.

- PHYS 27200 - Electric And Magnetic Interactions ♦ (also satisfies Science for core)

Physics Majors are required to take the honors sections of PHYS 27200 in the spring.

- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- PHYS 41000 - Physical Mechanics I Honors
- PHYS 41600 - Thermal And Statistical Physics Honors

- PHYS 42200 - Waves And Oscillations
 - PHYS 43000 - Electricity And Magnetism I Honors
 - PHYS 45000 - Intermediate Laboratory
 - PHYS 46000 - Quantum Mechanics I Honors
 - PHYS 59300 - Independent Research
- Calculus III Option - Select from:
- MA 26100 - Multivariate Calculus (satisfies Quantitative Reasoning for core) or
 - MA 27101 - Honors Multivariate Calculus (satisfies Quantitative Reasoning for core)

Major Selective* - 24 credits

- Must be in chosen applied area(s) approved by the Physics and Astronomy Department
- Any >30000 level course taken for letter grade option (pass/no-pass option not approved) in the following course subjects:
- AAE, BIOL, CE, CHM, CS, EAPS, ECE, ME, MSE

Other Departmental/Program Course Requirements (37-66 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (8 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦
- CHM 11600 - General Chemistry ♦

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods or
- STAT 35000 - Introduction To Statistics

Team-Building and Collaboration

Met with required major coursework (PHYS 17200).

Electives (0-15 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CHM 11500 - General Chemistry ♦
- PHYS 17200 - Modern Mechanics ♦ (Honors sections)
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00

15-17 Credits

Spring 1st Year

- PHYS 27200 - Electric And Magnetic Interactions ♦ (Honors sections)
- CHM 11600 - General Chemistry ♦

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Fall 2nd Year

- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 2nd Year

- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 42200 - Waves And Oscillations
- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- PHYS 41000 - Physical Mechanics I Honors
- PHYS 45000 - Intermediate Laboratory
- PHYS 46000 - Quantum Mechanics I Honors
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Science Core Selection - Credit Hours: 3.00

17-18 Credits

Spring 3rd Year

- PHYS 43000 - Electricity And Magnetism I Honors
- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00

- Major Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15 Credits

Fall 4th Year

- PHYS 41600 - Thermal And Statistical Physics Honors
- PHYS 59300 - Independent Research
- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Great Issues Option - Credit Hours: 3.00

16 Credits

Spring 4th Year

- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

14 Credits

Notes

- * Could Satisfies a University Core Requirement
- 3.0 Graduation GPA required for Bachelor of Science degree.
- 3.0 average in PHYS/ASTR classes required to graduate.
- No more than one C grade (i.e., C+, C, or C-) is allowed in all physics courses taken
- No grade of D+ or worse is allowed in any course.
- ♦ Identified as a critical course. Students should earn minimum of a B- see advisor for further details

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.

- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Applied Physics, BS

About the Program

Purdue physics is an internationally recognized department for excellence in forefront research and undergraduate and graduate education. Our undergraduate classes for physics majors average 30 or fewer students and are taught by professors actively engaged in forefront research. Undergraduate research is strongly encouraged and opportunities exist as early as the second semester to work in a research group. These groups include experimental and theoretical condensed matter physics, high energy physics, nano-physics, nuclear physics, astrophysics, biological physics, geophysics, relativity, and interdisciplinary areas of material science, engineering, or computational science.

The department also helps undergraduates with external internships, particularly for the summers. Upon graduation our students are accepted for graduate programs at many of the top universities and are also sought after for positions in

industry, particularly high-tech positions. Our graduates have an exceptional record of career accomplishment in a wide variety of settings, including academia and major industrial and government labs.

The specialties under the applied physics curriculum can range from different areas. Individually tailored specialties may be chosen by the student in consultation with an advisor. Currently available specialties include:

- Geophysics and Atmospheric Sciences
- Astrophysics
- Computational Physics
- Nuclear Physics
- Material Science & Engineering
- Chemical Engineering
- Aeronautical & Astronautical Engineering
- Industrial Engineering
- Electrical and Computer Engineering
- Mechanical Engineering
- Medical Physics

In addition, many physics majors manage to complete dual or multiple major programs within the College of Science. This is possible because of a considerable overlap of the College of Science requirements. Popular dual majors with physics are: mathematics, computer science and chemistry.

Physics Website

Physics Major Change (CODO) Requirements (Students must CODO into Physics before Applied.)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also

be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Applied Physics Major Courses (64 - 66 credits)

Required Major Courses (40-42 credits)

- PHYS 17200 - Modern Mechanics ♦ Physics Majors are required to take the honors sections of PHYS 17200 (satisfies Science for core) (satisfies Teambuilding for College of Science core)
- PHYS 27200 - Electric And Magnetic Interactions ♦ Physics Majors are required to take the honors sections of PHYS 27200 (satisfies Science for core)
- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 31000 - Intermediate Mechanics
- PHYS 33000 - Intermediate Electricity And Magnetism
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- PHYS 36000 - Quantum Mechanics
- PHYS 42200 - Waves And Oscillations
- PHYS 45000 - Intermediate Laboratory
- PHYS 51500 - Thermal And Statistical Physics
Calculus III Option - Select from:
 - MA 26100 - Multivariate Calculus (satisfies Quantitative Reasoning for core) or
 - MA 27101 - Honors Multivariate Calculus (satisfies Quantitative Reasoning for core)

Major Selective* - (24 credits)

- Any >30000 level course taken for letter grade option (pass/no-pass option not approved) in the following course subjects, as approved by the Physics and Astronomy Department:
- AAE, BIOL, CE, CHM, CS, EAPS, ECE, ME, MSE

Other Departmental/Program Course Requirements (37-66 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I

- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (8 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦
- CHM 11600 - General Chemistry ♦

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦

Team-Building and Collaboration

Met with required major coursework (PHYS 17200).

Electives (1-19 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)

- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- PHYS 17200 - Modern Mechanics ♦ (Honors sections)
- CHM 11500 - General Chemistry ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00

15-17 Credits

Spring 1st Year

- PHYS 27200 - Electric And Magnetic Interactions ♦ (Honors sections)
- CHM 11600 - General Chemistry ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Fall 2nd Year

- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 2nd Year

- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 42200 - Waves And Oscillations
- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00

16-18 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- PHYS 33000 - Intermediate Electricity And Magnetism
- PHYS 45000 - Intermediate Laboratory
- PHYS 31000 - Intermediate Mechanics or
- PHYS 41000 - Physical Mechanics I Honors
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

15-16 Credits

Spring 3rd Year

- PHYS 36000 - Quantum Mechanics
- PHYS 51500 - Thermal And Statistical Physics
- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15 Credits

Fall 4th Year

- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Great Issues Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

15 Credits

Spring 4th Year

- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Major Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Electives - Credit Hours: 2.00

14 Credits

Notes

- *COULD Satisfies a University Core Requirement
- 2.0 Graduation GPA required for Bachelor of Science degree.
- 2.0 average in PHYS/ASTR classes required to graduate.
- ♦ Identified as a critical course. Students should earn minimum of a B- see advisor for further details

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Physics Honors, BS

About the Program

Purdue physics is an internationally recognized department for excellence in forefront research and undergraduate and graduate education. Our undergraduate classes for physics majors average 30 or fewer students and are taught by professors actively engaged in forefront research. Undergraduate research is strongly encouraged and opportunities exist as early as the second semester to work in a research group. These groups include experimental and theoretical condensed matter physics, high energy physics, nano-physics, nuclear physics, astrophysics, biological physics, geophysics, relativity, and interdisciplinary areas of material science, engineering, or computational science.

The department also helps undergraduates with external internships, particularly for the summers. Upon graduation our students are accepted for graduate programs at many of the top universities and are also sought after for positions in industry, particularly high-tech positions. Our graduates have an exceptional record of career accomplishment in a wide variety of settings, including academia and major industrial and government labs.

The honors program offers an intensive concentration in physics that provides a solid foundation for advanced studies. Successful graduates of this challenging program are recognized for both the depth and breadth of their physics education, and they have gone on to the premier graduate schools in the country and, ultimately, to many different career choices.

The honors program provides a solid theoretical and experimental background in mechanics, electromagnetism, waves and oscillations, thermal physics, quantum mechanics, and the micro-structure of matter.

A very important feature of this plan is a senior research project (PHYS 59300) with a written report in some area of modern physics, such as condensed matter physics, nuclear physics, elementary particle physics, biophysics, geophysics, etc. Students receive individual supervision and guidance from a faculty member whose specialty matches the area of their research project. PHYS 59300 introduces students to the type of research atmosphere they later might encounter as professional physicists, and it promotes self-motivation and independence in their work.

The Honors Program in the Department of Physics and Astronomy begins in the Junior Year. All physics majors typically start by taking PHYS 17200 and PHYS 27200 as freshmen. Students from other majors who have taken PHYS 17200/PHYS 27200 may switch into the Honors Physics major. Admission to, and continuation in, the honors program requires that all the core courses (PHYS 17200, PHYS 27200, PHYS 30600, PHYS 30700, PHYS 34400, PHYS 34000, and PHYS 42200) be complete with a B or better, or special permission from the Physics Undergraduate Committee.

The following stipulations need to be met in order to be in, stay in and graduate in the Honors or Applied Honors Program:

- No D+ or worse grade is allowed in any course for a student to stay in the Honors Programs.
- No more than one C range grade is allowed in all physics courses taken for a student to graduate with Honor. Note that a course can be re-taken for the purpose of satisfying this guideline.
- Both the physics AND overall GPAs of 3.0 or better are required for a student to graduate with Honor.
- All the core courses (PHYS 17200, PHYS 27200, PHYS 30600, PHYS 30700, PHYS 34400, PHYS 34000, and PHYS 42200) be complete with a B or better.
- Students need to petition to Undergraduate Committee for exceptions or requests.

Physics Website

Physics Major Change (CODO) Requirements (Students must CODO into Physics before moving into Physics Honors.)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.

- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options. College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Physics Honors Major Courses (66-68 credits)

Required Major Courses (51-52 credits)

- PHYS 17200 - Modern Mechanics ♦ (Physics majors are required to take the honors sections; satisfies Science for core; satisfies Teambuilding Experience for College of Science core)
- PHYS 27200 - Electric And Magnetic Interactions ♦ (Physics majors are required to take the honors sections; also satisfies Science for core)
- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- PHYS 41000 - Physical Mechanics I Honors
- PHYS 41100 - Physical Mechanics II Honors

- PHYS 41600 - Thermal And Statistical Physics Honors
- PHYS 42200 - Waves And Oscillations
- PHYS 43000 - Electricity And Magnetism I Honors
- PHYS 43100 - Electricity And Magnetism II Honors
- PHYS 45000 - Intermediate Laboratory
- PHYS 46000 - Quantum Mechanics I Honors
- PHYS 46100 - Quantum Mechanics II Honors
- PHYS 59300 - Independent Research

Calculus III Options - Credit Hours: 4-5

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Major Selective* (15-16 credits)

Advanced Lab Options

- PHYS 53600 - Electronic Techniques For Research or
- PHYS 58000 - Computational Physics
- PHYS/ASTR Selective ≥ 500 level - Credit Hours: 3.00
- PHYS/ASTR Selective ≥ 500 level - Credit Hours: 3.00
- Science/Engineering Selective ≥ 300 level (could be met by Statistics for College of Science core) - Credit Hours: 3.00
- Science/Engineering Selective ≥ 300 level (could be met by Statistics for College of Science core) - Credit Hours: 3.00

Other Departmental/Program Course Requirements (43-62 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (8 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦
- CHM 11600 - General Chemistry ♦

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦

Team-Building and Collaboration

Met with required major coursework (PHYS 17200).

Electives (1-17 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- PHYS 17200 - Modern Mechanics ♦ (Honors sections)
- CHM 11500 - General Chemistry ♦
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core First-Year Composition Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 1st Year

- CHM 11600 - General Chemistry ♦
- PHYS 27200 - Electric And Magnetic Interactions ♦ (Honors sections)
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Fall 2nd Year

- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 2nd Year

- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 42200 - Waves And Oscillations
- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science/Engineering Selective ≥ 300 - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16-17 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- PHYS 41000 - Physical Mechanics I Honors
- PHYS 45000 - Intermediate Laboratory
- PHYS 46000 - Quantum Mechanics I Honors

- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

18 Credits

Spring 3rd Year

- PHYS 41100 - Physical Mechanics II Honors
- PHYS 43000 - Electricity And Magnetism I Honors
- PHYS 46100 - Quantum Mechanics II Honors
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

16-18 Credits

Fall 4th Year

- PHYS 41600 - Thermal And Statistical Physics Honors
- PHYS 43100 - Electricity And Magnetism II Honors
- PHYS 59300 - Independent Research
- Science/Engineering Selective ≥ 300 - Credit Hours: 3.00
- Great Issues Option - Credit Hours: 3.00

15 Credits

Spring 4th Year

- PHYS 53600 - Electronic Techniques For Research or
- PHYS 58000 - Computational Physics
- PHYS/ASTR Selective ≥ 500 - Credit Hours: 3.00
- PHYS/ASTR Selective ≥ 500 - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

13-15 Credits

Notes

- * COULD Satisfies a University Core Requirement
- 3.0 Graduation GPA required for Bachelor of Science degree.
- 3.0 average in PHYS/ASTR classes required to graduate.
- No more than one C grade (i.e., C+, C, or C-) is allowed in all physics courses taken
- No grade of D+ or worse is allowed in any course.

- ♦ Identified as a critical course. Students should earn minimum of a B- see advisor for further details

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Physics, BS

About the Program

Purdue physics is an internationally recognized department for excellence in forefront research and undergraduate and graduate education. Our undergraduate classes for physics majors average 30 or fewer students and are taught by professors actively engaged in forefront research. Undergraduate research is strongly encouraged and opportunities exist as early as the second semester to work in a research group. These groups include experimental and theoretical condensed matter physics, high energy physics, nano-physics, nuclear physics, astrophysics, biological physics, geophysics, relativity, and interdisciplinary areas of material science, engineering, or computational science.

The department also helps undergraduates with external internships, particularly for the summers. Upon graduation our students are accepted for graduate programs at many of the top universities and are also sought after for positions in industry, particularly high-tech positions. Our graduates have an exceptional record of career accomplishment in a wide variety of settings, including academia and major industrial and government labs.

This program offers a specialization in physics as the core of a broad general education. The core courses provide a solid foundation in Classical Mechanics, Electricity and Magnetism, Waves and Oscillations, Quantum Mechanics, Thermal and Statistical Physics, Modern Physics, Relativity, Electronics, and Computational Physics.

By using electives in the program, a student can include concentrations in condensed matter physics (PHYS 54500), nuclear physics (PHYS 55600), astrophysics (PHYS 56000), particle physics (PHYS 56400), and other areas. Students also are encouraged to participate in one or two semesters of individual research projects with a selected faculty member (PHYS 39000, PHYS 49000, or PHYS 59000).

Opportunities for employment in fields related to physics will also be enhanced by taking electives in additional science courses such as biological sciences, chemistry, computer science, geosciences, meteorology, and in various branches of engineering. With assistance from an advisor, a student can prepare an individualized program suited to career plans by selecting electives from these areas or from any other area within the University. Normally, students take such electives as juniors and seniors.

[Physics Website](#)

[Physics Major Change \(CODO\) Requirements](#)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click [here](#).

Physics Major Courses (52-55 credits)

Required Major Courses (40-42 credits)

- PHYS 17200 - Modern Mechanics ♦ (Physics majors required to take honors sections; satisfies Science for core; satisfies Teambuilding for College of Science core)
 - PHYS 27200 - Electric And Magnetic Interactions ♦ (Physics majors required to take honors sections; satisfies Science for core)
 - PHYS 30600 - Mathematical Methods Of Physics I
 - PHYS 30700 - Mathematical Methods Of Physics II
 - PHYS 31000 - Intermediate Mechanics
 - PHYS 33000 - Intermediate Electricity And Magnetism
 - PHYS 34000 - Modern Physics Laboratory
 - PHYS 34400 - Modern Physics
 - PHYS 36000 - Quantum Mechanics
 - PHYS 42200 - Waves And Oscillations
 - PHYS 45000 - Intermediate Laboratory
 - PHYS 51500 - Thermal And Statistical Physics
- Calculus III Option** - Credit Hours: 4-5
- MA 26100 - Multivariate Calculus or
 - MA 27101 - Honors Multivariate Calculus (satisfies Quantitative Reasoning for core)

Major Selective* (12-13 credits)

Advanced Lab Option

- PHYS 53600 - Electronic Techniques For Research or
- PHYS 58000 - Computational Physics
- PHYS/ASTR \geq 300 level - Credit Hours: 3.00
- Science/Engineering Elective \geq 300 level (could be met by Statistics for College of Science core) - Credit Hours: 3.00
- Science/Engineering Elective \geq 300 level (could be met by Great Issues for College of Science core) - Credit Hours: 3.00

Other Departmental/Program Course Requirements (43-62 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (8 credits)

(satisfies Science for core)

- CHM 11500 - General Chemistry ♦
- CHM 11600 - General Chemistry ♦

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics (3 credits)

- STAT 30100 - Elementary Statistical Methods ♦ or
- STAT 35000 - Introduction To Statistics ♦

Team-Building and Collaboration* (0-3 credits)

Met with required major coursework (PHYS 17200).

Electives (3-24 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or

- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- CHM 11500 - General Chemistry ♦
- PHYS 17200 - Modern Mechanics ♦ (Honors sections)
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core First-Year Composition Selection - Credit Hours: 3.00-4.00

15-17 Credits

Spring 1st Year

- CHM 11600 - General Chemistry ♦
- PHYS 27200 - Electric And Magnetic Interactions ♦ (Honors sections)
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Fall 2nd Year

- PHYS 30600 - Mathematical Methods Of Physics I
- PHYS 34000 - Modern Physics Laboratory
- PHYS 34400 - Modern Physics
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 2nd Year

- PHYS 30700 - Mathematical Methods Of Physics II
- PHYS 42200 - Waves And Oscillations
- STAT 30100 - Elementary Statistical Methods ♦ or

- STAT 35000 - Introduction To Statistics ♦
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 3rd Year

- PHYS 31000 - Intermediate Mechanics
- PHYS 33000 - Intermediate Electricity And Magnetism
- PHYS 45000 - Intermediate Laboratory
- COM 21700 - Science Writing And Presentation
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00

18 Credits

Spring 3rd Year

- PHYS 36000 - Quantum Mechanics
- PHYS 51500 - Thermal And Statistical Physics
- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- Science Core Selection* - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- PHYS/ASTR Selective ≥ 300 level - Credit Hours: 3.00
- Science/Engineering Selective ≥ 300 - Credit Hours: 3.00
- Great Issues In Science Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Spring 4th Year

- PHYS 53600 - Electronic Techniques For Research or
- PHYS 58000 - Computational Physics
- Science/Engineering Selective ≥ 300 - Credit Hours: 3.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 3.00
- Electives - Credit Hours: 2.00

14-15 Credits

Notes

- 2.0 Graduation GPA required for Bachelor of Science degree.
- 2.0 average in PHYS/ASTR classes required to graduate.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-

2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Minor

Astronomy Minor

Requirements for the Minor (15-16 credits)

Before undertaking this minor, the student must establish the prerequisites for the required minor courses.

Required Courses (12-13 credits)

- ASTR 36300 - The Solar System
- ASTR 36400 - Stars And Galaxies
- ASTR 37000 - Cosmology
- PHYS 34200 - Modern Physics or
- PHYS 34400 - Modern Physics

Additional Course - Choose One (3 credits)

- ASTR 56000 - Stellar Evolution
- PHYS 56000 - Stellar Evolution
- ASTR 56100 - Galaxies And Large Scale Structure
- PHYS 56100 - Galaxies And Large Scale Structure
- ASTR 56200 - Introduction To High Energy Astrophysics
- PHYS 56200 - Introduction To High Energy Astrophysics
- ASTR 56300 - Astroparticle Physics
- PHYS 56300 - Astroparticle Physics
- ASTR 56700 - Observational Techniques In Astronomy
- PHYS 56700 - Observational Techniques In Astronomy
- PHYS/ASTR - Approved 40000- level or above - Credit Hours: 3.00

Notes

- A student must receive a GPA of 2.0 or higher in required minor courses.

- In addition, GPA over all PHYS and ASTR courses must be 2.0 or higher. (These requirements apply to students who matriculate at Purdue in or after Fall 2011.)
- ALL REQUIRED COURSES FOR THIS MINOR MUST BE TAKEN AT PURDUE UNIVERSITY.
- No course may be taken pass/fail.

Disclaimer

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Physics Minor

Requirements for the Minor (10-11 credits)

Before undertaking this minor, the student must establish the prerequisites for the required minor courses.

Required Courses (4-5 credits)

- PHYS 34000 - Modern Physics Laboratory
- PHYS 34200 - Modern Physics or
- PHYS 34400 - Modern Physics

Physics courses 30000-level or above (6 credits)

- PHYS 30000-59999 (Except PHYS 31700, PHYS 32300, PHYS 32400, PHYS 39000, PHYS 49000, PHYS 59000, or PHYS 59300)

Notes

- A student must receive a GPA of 2.0 or higher in required minor courses.
- These requirements apply to students who matriculate at Purdue in or after Fall 2011.
- ALL REQUIRED COURSES FOR THIS MINOR MUST BE TAKEN AT PURDUE UNIVERSITY
- No course may be taken pass/fail.

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Department of Statistics

Overview

Purdue University's Department of Statistics is one of the first dedicated Statistics programs in the country. From its inception as a Statistical Laboratory in 1947, it has been a prominent center of statistical research and has grown to become one of the largest Statistics departments in the United States. By pursuing foundational research in probability, statistical theory and methodology, and computational statistics, combined with interdisciplinary research in statistical genetics and bioinformatics, machine learning, computational finance, industrial Statistics, and other fields across Purdue University's campus, the Department of Statistics continues the proud tradition of making fundamental contributions to science while developing new methodologies, theories, and algorithms for statistics and machine learning. It has been a consistently top-ranked department among Statistics departments in the United States. In a world where data are being generated faster than they can be analyzed, the Department of Statistics promotes the design of meaningful experiments, observational studies, and surveys for data collection, the development of analysis and modeling methodologies for performing rigorous and valid inferences from the collected data, as well as the computational algorithms necessary to perform rigorous and valid inferences from the collected data and informed decision making based on the results of data analyses.

Housed in both Haas Hall and the Mathematical Sciences Building, the department's diverse faculty work to advance the frontiers of statistical science and data science in both theory and applications. They seek to provide learning environments that produce well-educated data scientists, statisticians, probabilists, and quantitatively literate people. They have a long history of providing cutting-edge learning environments conducive to successful and impactful graduates:

<https://www.stat.purdue.edu/alumni/profiles/index.html>. Through their interdisciplinary partnerships, the faculty, staff, and students of the department bring the strengths of the statistical sciences to address significant societal needs.

The department offers an undergraduate degree in Statistics, allowing students to focus on either Applied Statistics or Mathematical Statistics. Partnership with the Department of Mathematics also provides the opportunity to major in Actuarial Science, while a collaboration with the Department of Computer Science enables undergraduates to pursue a Data Science major. Undergraduates from a range of disciplines can minor in Statistics as well. Graduate students have access to an array of certificate, MS, and PhD programs with distinct concentrations and collaborative opportunities.

As of March 2021, there are 36 tenured and tenure-track professors, 5 emeriti faculty, 12 adjunct and courtesy faculty members, 5 visiting professors, and 16 lecturers who form the Department of Statistics faculty. The department has approximately 538 undergraduate students majoring in Statistics and/or Actuarial Science (a joint major with the Department of Statistics), and 410 student have the major Data Science. The department has 173 graduate students, 95 are Ph.D. students and 78 are M.S. students.

Department of Statistics Website

Faculty

Contact Information

Department of Statistics

Purdue University
250 N. University Street
West Lafayette, IN 47907-2066
USA

Phone: 1-765-494-6030

Fax: 1-765-494-0558

Administrative Contacts

Department Head: Hao Zhang zhanghao@purdue.edu

Associate Head: Tom Sellke tsellke@purdue.edu

Assistant to the Head: Julie Wise jlwise@purdue.edu

Graduate Information

For Graduate Information please see [Statistics Graduate Program Information](#).

Baccalaureate

Applied Statistics, BS

About the Program

Statistics at Purdue University is one of the largest (students and faculty) in the United States. It is consistently rated by U.S. News and World Report as one of the top departments in the country. It offers courses in fundamental statistics and probability, and also courses that focus on statistical computation to train students as future data scientists. Students enjoy a great deal of interaction with faculty as well as small classes. The department offers a master's program in which a student can earn both a bachelor's degree and a master's degree in five years.

The statistics major consists of two options:

- Applied statistics
- Mathematical statistics (Mathematical statistics usually leads to a double major in mathematics and statistics.)

[Statistics - Applied Statistics Website](#)

[Applied Statistics Major Change \(CODO\) Requirements](#)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (24-25 credits)

Required Major Courses (18 credits)

Average GPA in courses must be 2.00 in **Required Major Courses**.

- MA 35100 - Elementary Linear Algebra
- STAT 51200 - Applied Regression Analysis
- STAT 35000 - Introduction To Statistics ♦ (satisfies Statistics requirement for College of Science core) or
- STAT 35500 - Statistics For Data Science ♦
- MA 36200 - Topics In Vector Calculus or
- STAT 42000 - Introduction To Time Series
- MA 41600 - Probability (students SHOULD earn a C or better) or
- STAT 41600 - Probability (students SHOULD earn a C or better) or
- STAT 51600 - Basic Probability And Applications (students SHOULD earn a C or better) or
- IE 23000 - Probability And Statistics In Engineering I (students SHOULD earn a C or better)
- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference

Applied Statistics Selective (6-7 credits)

Choose 2 courses from the list below.

(Check with advisor for additional approved courses.)

- STAT 29000 - Topics In Statistics For Undergraduates Big Data Analysis for 3 credits
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments
- STAT 42000 - Introduction To Time Series
- STAT 47201 - Actuarial Models- Life Contingencies
- STAT 47301 - Introduction To Arbitrage-Free Pricing Of Financial Derivatives
- STAT 50600 - Statistical Programming And Data Management
- STAT 52200 - Sampling And Survey Techniques

One 3 credit combination of the courses below can be used to meet one STAT Selective

- STAT 19000 Data Mine I and II
- STAT 29000 Data Mine III and IV
- STAT 39000 Data Mine V and VI
- STAT 49000 Data Mine VII and VIII

Other Departmental/Program Course Requirements (36-64 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option; student should earn a C or better.

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (31-60 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)

- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency **website**.

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (STAT 10100 strongly recommended)
- Elective - Credit Hours: 4.00

15-18 Credits

Spring 1st Year

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

- Science Core Selection - Credit Hours: 3.00-4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus + or
- MA 27101 - Honors Multivariate Calculus +
- Science Core Selection Written Communication - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 36200 - Topics In Vector Calculus or
- STAT 42000 - Introduction To Time Series
- MA 41600 - Probability + or
- STAT 41600 - Probability + or
- STAT 51600 - Basic Probability And Applications +
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference
- Applied Statistics Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- STAT 51200 - Applied Regression Analysis
- Great Issues Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective (recommended STS course) - Credit Hours: 3.00
- Electives - Credit Hours: 3.00

15 Credits

Spring 4th Year

- Applied Statistics Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-18 Credits

Notes

- Average GPA in courses must be 2.00 in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Students should strive to earn a C or better.
- Credits should be allowed in no more than one of STAT 30100, STAT 35000, STAT 50100, and in no more than one of STAT 50300 and 51100.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.

- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Data Science, BS (Statistics)

About the Program

Majoring in data science at Purdue will place you at the forefront of an emerging field and prepare you for an exciting career at the intersection of computer science and statistics.

Created jointly by Purdue's Department of Computer Science and Department of Statistics, the data science major will open pathways to careers in virtually every area of society, from healthcare, security and sustainability to education, business and economics.

Data Science Major

Data Science (Statistics) Major Change (CODO) Requirements

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options. College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click [here](#).

Degree Requirements

120 Credits Required

Data Science Major Courses (50-54 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦* (satisfies Computing and Teambuilding for College of Science core)
- CS 18200 - Foundations Of Computer Science
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- CS 25100 - Data Structures And Algorithms
- CS 37300 - Data Mining And Machine Learning
- CS 38003 - Python Programming
- CS 49000 - Topics In Computer Sciences For Undergraduates - (Large Scale Data Analysis (LDA))
- MA 35100 - Elementary Linear Algebra
- STAT 35500 - Statistics For Data Science
- STAT 41600 - Probability
- STAT 41700 - Statistical Theory
- CS 24200 - Introduction To Data Science or
- STAT 24200 - Introduction To Data Science
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Ethics Selective (3 credits)

Choose one.

- ILS 23000 - Data Science And Society: Ethical Legal Social Issues
- PHIL 20700 - Ethics For Technology, Engineering, And Design
- PHIL 20800 - Ethics Of Data Science - (must be 3.00 Credit Hour option)

CS Selectives (6 credits)

Choose two.

- CS 31400 - Numerical Methods
- CS 35500 - Introduction To Cryptography
- CS 47100 - Introduction to Artificial Intelligence
- CS 47300 - Web Information Search And Management
- CS 49000 - Topics In Computer Sciences For Undergraduates -IDV Introduction to Data Visualization
- CS 30700 - Software Engineering I or
- CS 40800 - Software Testing
- CS 34800 - Information Systems or
- CS 44800 - Introduction To Relational Database Systems
- CS 38100 - Introduction To The Analysis Of Algorithms or
- CS 48300 - Introduction To The Theory Of Computation

Statistics Selective (3 credits)

Choose one.

- STAT 42000 - Introduction To Time Series
- STAT 50600 - Statistical Programming And Data Management
- STAT 51200 - Applied Regression Analysis
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments
- STAT 52200 - Sampling And Survey Techniques
- STAT 52500 - Intermediate Statistical Methodology
- MA 49000 - Topics In Mathematics For Undergraduates - Elementary Stochastic Processes or
- STAT 49000 - Topics In Statistics For Undergraduates - Elementary Stochastic Processes

Capstone Experience (0-3 credits)

Choose one option below.

For-Credit Options:

- STAT 49000 - Topics In Statistics For Undergraduates (Data Science Capstone or Research Project In Data Science) - Credit Hours: 3.00

- CS 49000 - Topics In Computer Sciences For Undergraduates - Introduction to Data Visualization (if taken after CS 37300; could not be used as CS Elective) - Credit Hours: 3.00
- CS 30700 - Software Engineering I (if taken after CS 37300; could not be used as CS Elective)
- CS 49700 - Honors Research Project
- EPCS 41100 - Senior Design Participation In EPICS
- EPCS 41200 - Senior Design Participation In EPICS

Zero-Credit Options:

- CS 38600 - Professional Practice IV or
- STAT 38600 - Cooperative Work Experience IV
- CS 48700 - Professional Practice V or
- STAT 48700 - Cooperative Work Experience V
- CS 49000 Research Project in Data Science - Credit Hours: 0.00 or
- STAT 49000 Research Project in Data Science - Credit Hours: 0.00

Other Departmental/Program Course Requirements (29-52 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing

Met with required major coursework.

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200) or
- MA 16500 - Analytic Geometry And Calculus I (must have C or better to meet prerequisite for CS 18200)

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^* (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration

Met with required major coursework.

Electives (14-41 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ *
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-18 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science *
- CS 38003 - Python Programming
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Electives - Credit Hours: 1.00

15-18 Credits

Fall 2nd Year

- STAT 35500 - Statistics For Data Science
- CS 24200 - Introduction To Data Science or
- STAT 24200 - Introduction To Data Science
- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 3.00

14-18 Credits

Spring 2nd Year

- CS 25100 - Data Structures And Algorithms *
- MA 35100 - Elementary Linear Algebra
- STAT 41600 - Probability
- ILS 23000 - Data Science And Society: Ethical Legal Social Issues ♦ or
- PHIL 20700 - Ethics For Technology, Engineering, And Design ♦ or

- PHIL 20800 - Ethics Of Data Science ♦ - (must be 3.00 Credit Hour option)
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 - 2.00

16-18 Credits

Fall 3rd Year

- COM 21700 - Science Writing And Presentation
- CS 37300 - Data Mining And Machine Learning
- STAT 41700 - Statistical Theory
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- CS Selective - Credit Hours 3.00
- Statistics Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- CS 49000 - Topics In Computer Sciences For Undergraduates - (Large Scale Data Analytics (LSDA))
- CS Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00 - 3.00

16-17 Credits

Spring 4th Year

- Capstone Experience/Course - Credit Hours: 0.00 - 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

13-18 Credits

Notes

- A minimum of 32 semester credits of upper level (30000+) required
- 2.0 Major and Graduation GPA required for Bachelor of Science degree.
- *All CS and STAT courses required for the major, must be completed with a grade of "C" or better.
- *All prerequisites to CS and STAT courses required for the major, regardless of department, must be completed with a grade of "C" or better.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
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GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Statistics - Math Emphasis, BS

About the Program

Statistics at Purdue University is one of the largest (students and faculty) in the United States. It is consistently rated by *U.S. News and World Report* as one of the top departments in the country. It offers courses in fundamental statistics and probability, and also courses that focus on statistical computation to train students as future data scientists. Students enjoy a great deal of interaction with faculty as well as small classes. The department offers a master's program in which a student can earn both a bachelor's degree and a master's degree in five years.

The statistics major consists of two options:

- Applied statistics

- Mathematical statistics (Mathematical statistics usually leads to a double major in mathematics and statistics.)
Statistics - Applied Statistics Website

Statistics - Math Emphasis Major Change (CODO) Requirements

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the preceding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please [click here](#).

Departmental/Program Major Courses (30-31 credits)

Required Major Courses (21 credits)

Average GPA in courses must be 2.00 in **Required Major Courses**.

- MA 35100 - Elementary Linear Algebra
- MA 35301 - Linear Algebra II
- MA 42500 - Elements Of Complex Analysis
- STAT 51200 - Applied Regression Analysis
- STAT 35000 - Introduction To Statistics ♦ (satisfies Statistics Requirement for College of Science Core) or
- STAT 35500 - Statistics For Data Science ♦ (satisfies Statistics Requirement for College of Science Core)
- MA 41600 - Probability (students SHOULD earn a C or better) or
- STAT 41600 - Probability (students SHOULD earn a C or better) or

- STAT 51600 - Basic Probability And Applications (students SHOULD earn a C or better) or
- IE 23000 - Probability And Statistics In Engineering I
- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I

Advanced Math Selective (3-4 credits)

Choose one.

- MA 36600 - Ordinary Differential Equations
- MA 37500 - Introduction To Discrete Mathematics
- MA 42800 - Introduction To Fourier Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II
- MA 45000 - Algebra Honors
- MA 45300 - Elements Of Algebra I

Statistics Selective (3 credits)

Choose one.

- CS 37300 - Data Mining And Machine Learning (Data Science, Computer Science, Computer Science Honors majors only)
- IE 53000 - Quality Control
- MA 43200 - Elementary Stochastic Processes
Cross-listed with STAT 43200
- STAT 29000 - Topics In Statistics For Undergraduates Big Data Analysis 3 credits
- STAT 42000 - Introduction To Time Series
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments
One three credit combination of the following courses with the titles below can be used for ONE STAT selective:
 - STAT 19000 Data Mine I and II
 - STAT 29000 Data Mine III and IV
 - STAT 39000 Data Mine V and VI
 - STAT 49000 Data Mine VII and VIII

Other Departmental/Program Course Requirements (36-64 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option; student should earn a C or better.

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (25-54 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)
- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, click [here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (STAT 10100 strongly recommended)
- Elective - Credit Hours: 3.00 - 4.00

15-17 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects
♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus + or
- MA 27101 - Honors Multivariate Calculus +
- Science Core Selection Written Communication - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00 (MA 30100 recommended)
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 2nd Year

- MA 35100 - Elementary Linear Algebra
- COM 21700 - Science Writing And Presentation
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I
- MA 41600 - Probability + or
- STAT 41600 - Probability + or
- STAT 51600 - Basic Probability And Applications + or
- IE 23000 - Probability And Statistics In Engineering I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference
- Advanced Math Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15-17 Credits

Fall 4th Year

- MA 42500 - Elements Of Complex Analysis
- STAT 51200 - Applied Regression Analysis
- Great Issues Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective (STS course recommended) - Credit Hours: 3.00

15-16 Credits

Spring 4th Year

- MA 35301 - Linear Algebra II
- Statistics Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00

- Elective - Credit Hours: 3.00

15-17 Credits

Notes

- Average GPA in courses must be 2.00 in **Required Major Courses**.
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Student should strive to earn a C or better.
- Credit should be allowed in no more than one of STAT 30100, STAT 35000, STAT 50100, and in no more than one of STAT 50300 and 51100.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade.
University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.
- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Statistics Honors, BS

About the Program

Statistics at Purdue University is the only doctorate-granting program in statistics in Indiana and is one of the largest (students and faculty) in the United States. It is consistently rated by *U.S. News and World Report* as one of the top departments in the country. Students enjoy a great deal of interaction with faculty as well as small classes. For students with excellent preparation in high school, the department offers a master's program in which a student can earn both a bachelor's degree and a master's degree in five years.

The statistics major consists of two options:

- Applied statistics
 - Mathematical statistics (Mathematical statistics usually leads to a double major in mathematics and statistics.)
- Statistics - Applied Statistics Website

Statistics - Math Emphasis Major Change (CODO) Requirements (*Students wishing to CODO to Statistics Honors must first CODO to Statistics - Math Emphasis.*)

Degree Requirements

120 Credits Required

Curriculum and Degree Requirements for College of Science

A College of Science degree is conferred when a student successfully completes all requirements in their degree program. Students will complete coursework or approved experiential learning activities to meet the following three degree components:

- Major
- Science Core Curriculum
- Electives

Students may use any of the following options to meet College of Science degree requirements:

- Purdue Coursework
- AP, IB, and CLEP credit. The use of AP and IB coursework varies between College of Science degree plans.
- Transfer Credit. Students should consult the Admissions Transfer Credit Resource page for all available transfer options.

College of Science degree programs vary widely in their approval and use of the proceeding options and thus students are strongly encouraged to work closely with their academic advisors and to regularly consult their MyPurduePlan to view the use of each option in their degree plan.

Most College of Science degree programs contain elective credits students may use to pursue courses that relate to their interests or which support their major area of study. The elective area of a degree plan may also be used to complete minors, second majors and certificates such as the Entrepreneurial Certificate. With the

exception of courses on the No Count List, any Purdue course may be used to meet the elective area of a student's degree plan.

College of Science Core Requirements

All Students starting Purdue University Fall semester, 2007 or later are required to pursue the 2007 Science Core curriculum.

The College of Science Core Curriculum requires the completion of approved coursework and/or experiential learning opportunities in the following academic areas:

- Composition and Presentation
- Computing
- Cultural Diversity (Language and Culture)
- General Education
- Great Issues in Science
- Laboratory Science
- Mathematics
- Multidisciplinary Experience
- Statistics
- Teambuilding and Collaboration
- No Count List

Earning Core Curricular Requirements through Experience

Students may meet selected core curriculum requirements through approved experiential learning opportunities. Interested students should contact their academic advisor for more information on this option and incorporating experiential learning into their four-year program of study. For more information on earning requirements through experience, please click [here](#).

Departmental/Program Major Courses (30-31 credits)

Required Major Courses (21 credits)

- Average GPA in courses must be 2.00 in **Required Major Courses.**
- An Average GPA in MA 44000, MA 44200, MA 45000, STAT 51600 or STAT 51700 must

be 3.5 or higher - must take **three** of these five courses*.

- MA 35100 - Elementary Linear Algebra
- MA 35301 - Linear Algebra II
- MA 42500 - Elements Of Complex Analysis
- STAT 51200 - Applied Regression Analysis
- STAT 35000 - Introduction To Statistics
♦ (satisfies Statistics Requirement for College of Science Core) or
- STAT 35500 - Statistics For Data Science
♦ (satisfies Statistics Requirement for College of Science Core)
- MA 41600 - Probability (students SHOULD earn a C or better) or
- STAT 41600 - Probability (students SHOULD earn a C or better) or
- IE 23000 - Probability And Statistics In Engineering I or
- STAT 51600 - Basic Probability And Applications * (students SHOULD earn a C or better)
- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference *
- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I *

Advanced Math Selective (3-4 credits)

Choose one. Course can only be used once to meet a major requirement.

- MA 36600 - Ordinary Differential Equations
- MA 37500 - Introduction To Discrete Mathematics
- MA 42800 - Introduction To Fourier Analysis
- MA 44000 - Honors Real Analysis I
- MA 44200 - Honors Real Analysis II
- MA 45000 - Algebra Honors *
- MA 52000 - Boundary Value Problems Of Differential Equations
- Check with advisor for additional approved courses.

Statistics Selective (3 credits)

Choose one.

- MA 43200 - Elementary Stochastic Processes Cross-listed with STAT 43200
- STAT 29000 - Topics In Statistics For Undergraduates Big Data Analysis 3 credits
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments
- STAT 42000 - Introduction To Time Series
- IE 53000 - Quality Control
- CS 37300 - Data Mining And Machine Learning (Data Science, Computer Science, Computer Science Honors majors only)

One three credit combination of the following courses with the titles below can be used for ONE STAT selective:

- STAT 19000 Data Mine I and II
- STAT 29000 Data Mine III and IV
- STAT 39000 Data Mine V and VI
- STAT 49000 Data Mine VII and VIII

Other Departmental/Program Course Requirements (36- 64 credits)

COLLEGE OF SCIENCE CORE REQUIREMENTS

^ - Labeled as a Science Core Selection in the four year plan of study

* - Requirement may be met with a zero credit experiential learning option. See your advisor for more information.

Composition & Presentation

First-Year Composition (3-4 credits)

Choose one course from this list. (satisfies Written Communication and Information Literacy for core)

Technical Writing And Presentation* (0-6 credits)

Choose one or two from this list; COM 21700 is strongly recommended to satisfy Oral Communication for core.

Computing (3-4 credits)

- CS 15900 - C Programming ♦ or
- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦

Cultural Diversity (Language & Culture)^* (0-9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Humanities for core).

- Language & Culture Option I
- Language & Culture Option II
- Language & Culture Option III

General Education^ (9 credits)

Choose courses from this list to fulfill each Option below (select courses COULD satisfy Behavioral/Social Science for core).

- General Education Option I
- General Education Option II
- General Education Option III

Great Issues In Science (3 credits)

Choose one from this list.

Laboratory Science (6-8 credits)

Choose courses from this list to fulfill each Option below (satisfies Science for core).

- Laboratory Science Option I
- Laboratory Science Option II

Mathematics (8-10 credits)

(satisfies Quantitative Reasoning for core)

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I

- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II

Multidisciplinary Experience^{^*} (0-3 credits)

Choose one from this list (select courses COULD satisfy Science, Technology, Society for core).

Statistics

Met with required major coursework.

Team-Building and Collaboration* (0-3 credits)

Choose one from this list.

Required Pre-Requisite Course (4-5 Credits)

Calculus III Option; student should earn a C or better.

- MA 26100 - Multivariate Calculus or
- MA 27101 - Honors Multivariate Calculus

Electives (25-54 credits)

University Requirements

University Core Requirements

For a complete listing of University Core Course Selectives, visit the [Provost's Website](#).

- Human Cultures: Behavioral/Social Science (BSS)
- Human Cultures: Humanities (HUM)
- Information Literacy (IL)
- Oral Communication (OC)

- Quantitative Reasoning (QR)
- Science #1 (SCI)
- Science #2 (SCI)
- Science, Technology, and Society (STS)
- Written Communication (WC)

Civics Literacy Proficiency Requirement:

The Civics Literacy Proficiency activities are designed to develop civic knowledge of Purdue students in an effort to graduate a more informed citizenry.

Students will complete the Proficiency by passing a test of civic knowledge, and completing one of three paths:

- Attending six approved civics-related events and completing an assessment for each; or
- Completing 12 podcasts created by the Purdue Center for C-SPAN Scholarship and Engagement that use C-SPAN material and completing an assessment for each; or
- Earning a passing grade for one of **these approved courses** (or transferring in approved AP or departmental credit in lieu of taking a course)

For more information visit the Civics Literacy Proficiency [website](#).

Prerequisite Information:

For current pre-requisites for courses, [click here](#).

Program Requirements

Fall 1st Year

- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 1.00 (STAT 10100 strongly recommended)
- Elective - Credit Hours: 3.00

- Elective - Credit Hours: 1.00-2.00

15-18 Credits

Spring 1st Year

- CS 17700 - Programming With Multimedia Objects ♦ or
- CS 15900 - C Programming ♦ or
- CS 18000 - Problem Solving And Object-Oriented Programming ♦
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 2.00

15-18 Credits

Fall 2nd Year

- MA 26100 - Multivariate Calculus + or
- MA 27101 - Honors Multivariate Calculus +
- Science Core Selection Written Communication - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00 (MA 30100 recommended)
- Elective - Credit Hours: 2.00

15-18 Credits

Spring 2nd Year

- COM 21700 - Science Writing And Presentation
- MA 35100 - Elementary Linear Algebra
- STAT 35000 - Introduction To Statistics ♦ or
- STAT 35500 - Statistics For Data Science ♦
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15 Credits

Fall 3rd Year

- MA 34100 - Foundations Of Analysis or
- MA 44000 - Honors Real Analysis I *
- MA 41600 - Probability + or
- STAT 41600 - Probability + or
- STAT 51600 - Basic Probability And Applications +* or
- IE 23000 - Probability And Statistics In Engineering I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Spring 3rd Year

- STAT 41700 - Statistical Theory or
- STAT 51700 - Statistical Inference *
- Advanced MA Selective - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00
- Elective - Credit Hours: 3.00

15-16 Credits

Fall 4th Year

- MA 42500 - Elements Of Complex Analysis
- STAT 51200 - Applied Regression Analysis
- Great Issues Option - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective (STS course recommended) - Credit Hours: 3.00

15-16 Credits

Spring 4th Year

- MA 35301 - Linear Algebra II
- Statistics Selective - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

15 Credits

Notes

- Average GPA in courses must be 2.00 in **Required Major Courses**.
- * - **Average GPA in MA 44000, MA 44200, MA 45000, STAT 51600 or STAT 51700 must be 3.5 or higher - must take three of these five courses.**
- 2.0 Graduation GPA required for Bachelor of Science degree.
- + Student should strive to earn a C or better.
- Credit should be allowed in no more than one of STAT 30100, STAT 35000, STAT 50100, and in no more than one of STAT 50300 and 51100.

College of Science Pass/No Pass Option Policy

- Only free electives and courses at the 50000-level general education requirement may be taken under the pass/not-pass option.
- The pass/not-pass grade mode may be entered for courses which are not required by a student's major(s), minor(s) or science core curriculum.
- Grade mode Passing is equivalent to at a minimum grade of C- had a letter grade been awarded.
- Students may elect to use the pass/not-pass option for no more than 20% of the 124/120 credit requirement for graduation and for no more than two courses per academic year (Fall-Summer).
- The pass/not-pass option cannot be elected for a course that has already been completed with a letter grade. University Regulation.
- Students may take elective credit while abroad using the P/NP mode. In the case of universities which only post P/NP, the University will apply a calculation process to determine a letter grade.

- Department of Languages and Cultures P/NP policy and Language Placement results. Students must take advanced coursework for a letter grade to receive credit for lower-level language courses.

World Language Courses

World Language proficiency requirements vary by program. The following list is inclusive of all world languages PWL offers for credit; for acceptable languages and proficiency levels, see your advisor.

ASL-American Sign Language	ARAB-Arabic	CHNS-Chinese	FR-French
GER-German	GREK-Greek (Ancient)	HEBR-Hebrew (Biblical)	HEBR-Hebrew (modern)
ITAL-Italian	JPNS-Japanese	KOR-Korean	LATN-Latin
PTGS-Portuguese	RUSS-Russian	SPAN-Spanish	

Critical Course

The ♦ course is considered critical.

In alignment with the Degree Map Guidance for Indiana's Public Colleges and Universities, published by the Commission for Higher Education (pursuant to HEA 1348-2013), a Critical Course is identified as "one that a student must be able to pass to persist and succeed in a particular major. Students who want to be nurses, for example, should know that they are expected to be proficient in courses like biology in order to be successful. These would be identified by the institutions for each degree program".

Disclaimer

The student is ultimately responsible for knowing and completing all degree requirements.

The myPurduePlan powered by DegreeWorks is the knowledge source for specific requirements and completion.

Minor

Statistics Minor

Requirements for the Minor (15 credits)

- Before undertaking this minor, the student must establish the prerequisites for the required minor courses.
- A course can only be used in one area.
- ALL COURSES FOR THIS MINOR MUST BE TAKEN AT PURDUE UNIVERSITY FOR A GRADE (P/NP option is not allowed for the minor).
- Students must earn a 2.0 average in MA/STAT/IE/MGMT courses required for the minor.

Area 1 - Choose One (3 credits)

- STAT 30301 - Probability And Statistics For Business
- STAT 35000 - Introduction To Statistics
- STAT 35500 - Statistics For Data Science
- STAT 50300 - Statistical Methods For Biology
- STAT 51100 - Statistical Methods
- MGMT 30500 - Business Statistics (School of Management Majors Only; B- or better required)
- IE 33000 - Probability And Statistics In Engineering II (Industrial Engineering Majors Only; B- or better required)

Area 2 - Choose One (3 credits)

- STAT 22500 - Introduction To Probability Models
- STAT 31100 - Introductory Probability
- STAT 41600 - Probability
- MA 41600 - Probability
- IE 23000 - Probability And Statistics In Engineering I (Industrial Engineering Majors Only; B- or better required)

Area 3 (3 credits)

- STAT 51200 - Applied Regression Analysis

Area 4 - Choose Two (6 credits)

- IE 33600 - Operations Research - Stochastic Models
- STAT 41700 - Statistical Theory
- STAT 51400 - Design Of Experiments
- STAT 51300 - Statistical Quality Control or
- IE 53000 - Quality Control

Due to Minor Requirements and Pre-requisites, Below are the Suggested Pathways for Specific Majors

Krannert School of Management Majors

- MGMT 30500 - Business Statistics * or
- STAT 30301 - Probability And Statistics For Business *
- STAT 31100 - Introductory Probability
- STAT 51200 - Applied Regression Analysis
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments *B- or better required

Industrial Engineering Majors

- IE 33000 - Probability And Statistics In Engineering II B- or better required
- IE 23000 - Probability And Statistics In Engineering I B- or better required
- STAT 51200 - Applied Regression Analysis
- STAT 51400 - Design Of Experiments
- STAT 51300 - Statistical Quality Control or
- IE 53000 - Quality Control

Pharmacy, Nursing, Biology, Agriculture Majors (Majors that utilize STAT 50300)

- STAT 50300 - Statistical Methods For Biology
- STAT 22500 - Introduction To Probability Models
- STAT 51200 - Applied Regression Analysis
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments

Majors that require MA 26100 (Calculus III)

Mathematics majors should consider a dual major in Mathematics with Statistics instead of adding a Statistics minor.

- STAT 35000 - Introduction To Statistics
- STAT 41600 - Probability
- STAT 51200 - Applied Regression Analysis
- STAT 41700 - Statistical Theory
- STAT 51400 - Design Of Experiments

Majors that do not require MA 26100 (Calculus III)

- STAT 51100 - Statistical Methods
- STAT 22500 - Introduction To Probability Models
- STAT 51200 - Applied Regression Analysis
- STAT 51300 - Statistical Quality Control
- STAT 51400 - Design Of Experiments

Notes

- AT LEAST 9 credits of the 15 credit hour minor must be STAT courses. IE 53000 and MA 41600 are considered STAT courses due to cross-listing
- Students Majoring in Actuarial Science, Actuarial Science Honors, Data Science, Applied Statistics, Mathematical Statistics, Statistics with

Math Emphasis, and/or Statistics Honors **cannot** complete this minor.

- Courses that do not require calculus, such as PSY 20100 and SOC 38200 are not equivalent to the courses listed.
- Credit for the STAT minor is not allowed for more than one course in each group (per Course Catalog descriptions):
 - STAT 22500, STAT 31100, STAT 41600 or MA 41600
 - STAT 30100, STAT 35000, STAT 35500, STAT 50100
 - STAT 50300 and STAT 51100

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Pre-Program

Data Science First Year (Statistics)

Data Science First Year

Program Requirements (25-28 credits)

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ * (satisfies Computing and Teambuilding for College of Science core)
- CS 18200 - Foundations Of Computer Science *
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- CS 38003 - Python Programming
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- MA 16200 - Plane Analytic Geometry And Calculus II or

- MA 16600 - Analytic Geometry And Calculus II

- Science Core First Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 4.00

Fall 1st Year

- CS 18000 - Problem Solving And Object-Oriented Programming ♦ *
- CS 19100 - Freshman Resources Seminar
- CS 19300 - Tools
- MA 16100 - Plane Analytic Geometry And Calculus I or
- MA 16500 - Analytic Geometry And Calculus I
- Science Core Selection - Credit Hours: 3.00 - 4.00
- Elective - Credit Hours: 3.00

16-18 Credits

Spring 1st Year

- CS 18200 - Foundations Of Computer Science
- CS 38003 - Python Programming
- MA 16200 - Plane Analytic Geometry And Calculus II or
- MA 16600 - Analytic Geometry And Calculus II
- Science Core First Year Composition Selection - Credit Hours: 3.00-4.00
- Science Core Selection - Credit Hours: 3.00
- Elective - Credit Hours: 1.00

15-17 Credits

Notes

- *All CS and STAT courses required for the major, must be completed with a grade of "C" or better.
- *All prerequisites to CS and STAT courses required for the major, regardless of department, must be completed with a grade of "C" or better.

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