Departmental/Program Major Courses (35-41 credits)  *A 2.0 average is required in these courses

*Required Major Courses (27-29 credits)

(2)  BIOL 12100 Biology I: Diversity, Ecology and Behavior  *(satisfies Science, Technology & Society Selective for core)*

(3)  BIOL 13100 Biology II: Development, Structure, and Function of Organisms

(2)  BIOL 13500 First Year Biology Lab or BIOL 14501 First Yr Lab Neuro Res Project or IT 22600 Biotechnology Lab I

(3)  BIOL 23100 Biology III: Cell Structure & Function

(2)  BIOL 23200 Lab in Cell Structure & Function

(3)  BIOL 24100 Biology IV: Genetics & Molecular Biology

(2)  BIOL 24200 Lab in Genetics & Molecular Biology

(2)  BIOL 28600 Intro to Ecology & Evolution

(3)  BIOL 58000 Evolution

(3)  BIOL 58500 Ecology

(2-4)  Base Lab Requirement

*Intermediate Biology Selective - Select one; cannot also be used for Major Selectives below (3-4 credits)

(3-4)  Intermediate Biology Selective  *(Req #9)*

*Major Selectives –(5-8 credits)  Select one unique course for each: one course may satisfy only one selective

(3-4)  Biology Selective  *(Req # 13)*

(2-4)  Biology Selective  *(Req # 14)*

Other Departmental /Program Course Requirements (64-76 credits)

(5)  CHM 12901 General Chemistry

(4)  Organic CHM 1 Selective

(4)  Organic CHM 2 Selective

(4)  Chemistry Selective

(4)  PHYS 1 Selective – Select from PHYS 23300 or 17200  *(satisfies Science Selective for core)*

(4)  PHYS 2 Selective – Select from PHYS 23400 or 27200

(3-5)  Calculus 1 Selective – Select from MA 16010, 16100, or 16500  *(satisfies Quantitative Reasoning Selective for core)*

(3-5)  Calculus 2 Selective– Select from MA 16020, 16200, 16600 or 17300

(3)  STAT 50300

(3-4)  Computer Science Selective

(3)  ENGL 10600 or 10800  *(satisfies Written Communication for core); (satisfies Information Literacy Selective for core)*

(3)  Language & Culture 1 Selective

(3)  Language & Culture 2 Selective

(3)  Language & Culture 3 Selective

(3)  COM 21700  *(satisfies Oral Communication for core)*

(3)  General Education 1 Selective  *(satisfies Human Culture Behavioral/Social Science for core)*

(3)  General Education 2 Selective  *(satisfies Human Cultures Humanities for core)*

(3)  General Education 3 Selective

(0-3)  Teambuilding & Collaboration Selective

(3)  Great Issues Selective

(1-3)  Multidisciplinary Selective

Electives (3-21 credits)

University Core Requirements

Human Cultures Humanities  [ ]  Science, Technology & Society Selective  [ ]

Human Cultures Behavioral/Social Science  [ ]  Written Communication  [ ]

Information Literacy  [ ]  Oral Communication  [ ]

Science Selective  [ ]  Quantitative Reasoning  [ ]

Science Selective  [ ]

******************************************************************************************************************************

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

Revised 5/2016  (effective Fall 2016)
<table>
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<tr>
<th>Credits</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 1st Year</th>
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<td>BIOL 12100</td>
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<td>2</td>
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<tr>
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<td>CHM 116 coreq; BIOL 13100</td>
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<td>3-4</td>
<td>Computer Science Selective</td>
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<th>Spring 4th Year</th>
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<td>3-4</td>
<td>Biology Selective</td>
<td>(Req # 14)</td>
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<td>2-4</td>
<td>Base Lab Requirement</td>
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<td>Elective</td>
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<td>1-3</td>
<td>Multidisciplinary Selective</td>
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<td>Elective</td>
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<tr>
<td>4</td>
<td>Elective</td>
<td></td>
<td></td>
<td>12-14</td>
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<td>13-18</td>
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</table>

120 semester credits required for Bachelor of Science degree.
2.0 Graduation GPA required for Bachelor of Science degree.

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

Revised 5/2016 (effective Fall 2016)
Graduation Requirements:
- A minimum 2.0 average in all biology courses required for this major
- A minimum of 32 credits at or above the 300-level completed at a Purdue campus
- At least one 500-level Biology course other than BIOL 54200
- 120 Total Credits

BIOLOGY:
1. BIOL 12100  Biology I: Diversity, Ecology and Behavior  (2 cr.; fall) or
   BIOL 19500  Biodiversity, Ecology & Evolution  (3 cr.; fall)
2. BIOL 13100  Biology II: Development, Structure, and Function of Organisms  (3 cr.; spring) or
   BIOL 19500  Organismal Development & Physiology  (3 cr.; spring)
3. BIOL 13500  1st Year Biology Lab (2 cr.; both) or
   BIOL 14501  1st Year Biology Lab w/Neuro Research Project (2 cr.; fall) or
   IT 22600  Biotechnology Lab  (2 cr.; fall)
4. BIOL 23100  Biology III: Cell Structure and Function  (3 cr.; fall)
5. BIOL 23200  Laboratory in Biology III: Cell Structure and Function  (2 cr.; fall)
6. BIOL 24100  Biology IV: Genetics and Molecular Biology  (3 cr.; spring)
7. BIOL 24200  Laboratory in Genetics and Molecular Biology  (2 cr.; spring)
8. BIOL 28600  Intro. to Ecology and Evolution  (2 cr.; spring)
9. Intermediate Biology Selective: Choose one of these eight options:
   A. BIOL 328001 Principles of Physiology  (4 cr.; spring)
   B. BIOL 36700 Principles of Development  (2 cr.; spring) plus BIOL 36701 Principles of Development Laboratory  (1 cr.; spring)
   C. BIOL 39500 Macromolecules  (3 cr.; fall)
   D. BIOL 41500 Intro. to Molecular Biology  (3 cr.; spring)
   E. BIOL 41600 Viruses & Viral Diseases  (3 cr.; spring)
   F. BIOL 42000 Eukaryotic Cell Biology  (3 cr.; fall)
   G. BIOL 43600 Neurobiology  (3 cr.; fall)
   H. BIOL 438002 General Microbiology  (3 cr.; fall)
10. BIOL 58000  Evolution  (3 cr.; spring)
11. BIOL 58500  Ecology  (3 cr.; fall)
12. Lab Requirement:  Must meet Base Lab requirement as described on the back of this page.
13. Ecology Selective:  One of these five courses:
   A. BIOL 582104 Ecological Statistics  (3 cr.; fall)
   B. BIOL 587055 Animal Communication  (3 cr.; alternate fall)
   C. BIOL 591004 Field Ecology  (4 cr.; alternate fall)
   D. BIOL 592005 Evolution of Behavior  (3 cr.; spring)
   E. BIOL 595005 Disease Ecology  (3 cr.; alternate fall)
   F. BIOL 595005 Sensory Ecology  (3 cr.; alternate spring)
   G. BIOL 597005 Sex and Evolution  (3 cr.; alternate fall)
14. Biology Selective:  One course from the following:
   BIOL 438002 General Microbiology  (3 cr.; fall)
   BIOL 43900  Microbiology Lab  (2 cr.; fall)
   BIOL 44400  Human Genetics  (3 cr.; fall)
   BIOL 483006 Environmental & Conservation Biology  (3 cr.; alternate spring)
   BIOL 582104 Ecological Statistics  (3 cr.; fall)
   BIOL 587055 Animal Communication  (3 cr.; alternate fall)
   BIOL 591004 Field Ecology  (4 cr.; alternate fall)
   BIOL 592005 Evolution of Behavior  (3 cr.; alternate spring)
   BIOL 595005 Disease Ecology  (3 cr.; alternate fall)
   BIOL 595005 Sensory Ecology  (3 cr.; alternate spring)
   BIOL 597005 Sex and Evolution  (3 cr.; alternate fall)
   AGEC 52500  Environmental Policy Analysis  (3 cr.; spring)
   ANTH 53500  Foundations of Biological Anthropology  (3 cr.; fall)
   ANTH 53600  Primate Ecology  (3 cr.; spring)
   CE 35000  Environmental Engineering  (3 cr.; both)
   CE 35200  Biological Principles of Environmental Engineering  (3 cr.; both)
   ENTM 50000  Fundamentals of Entomology  (3 cr.; fall)
   FNR 44700  Vertebrate Population Dynamics  (4 cr.; fall)
   FNR 48800  Global Environmental Issues  (3 cr.; fall)
   POL 52300  Environmental Politics and Public Policy  (3 cr.; fall)

Other courses may be considered for this elective requirement (#14).  See your advisor for more information.

Footnotes and other requirements are on the back of this page.

Base Laboratory Requirement for all Biology Majors
1. Each student will satisfy each of the following three learning objectives:
   Objective 1 – Research planning, literature review, and writing
Objective 2 – Observation, experimentation
Objective 3 – Analysis, simulation, and presentation

2. Objectives may be met by taking courses according to the following chart:

<table>
<thead>
<tr>
<th>Courses</th>
<th>Title</th>
<th>Objective 1</th>
<th>Objective 2</th>
<th>Objective 3</th>
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<td>Microbiology Lab</td>
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<td>BIOL 44201</td>
<td>Protein Expression</td>
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<td>BIOL 44207</td>
<td>Protein Structure</td>
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<td>BIOL 44211</td>
<td>Anatomy &amp; Physiology</td>
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<tr>
<td>BIOL 44212</td>
<td>Microscopy &amp; Cell Bio</td>
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<tr>
<td>BIOL 44215</td>
<td>Physiology Measurements</td>
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<td>BIOL 54200</td>
<td>Neuropysiology</td>
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<td>BIOL 58210</td>
<td>Ecological Statistics</td>
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<tr>
<td>BIOL 59100</td>
<td>Field Ecology</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>CryoEM 3D Reconstruction</td>
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<td>BIOL 59500</td>
<td>Data Analysis in Neurosci</td>
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<td>BIOL 59500</td>
<td>Theory of Molecular Methods</td>
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<td>BIOL 59500</td>
<td>Neural Mech in Hlth Disease</td>
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3. Students who successfully complete a Biology Honors Research Thesis have successfully met all three objectives.
4. Undergraduate Research may be used to meet these objectives. Student must get Research Mentor approval for each objective after that objective is completed. Student must also earn at least four credits of BIOL 49400 or 49900 research. Consult with your academic advisor for the forms used to obtain Research Mentor for each objective.
5. A combination of courses and research may be used to meet this requirement.

CHEMISTRY
1. General Chemistry:
   1. CHM 12901 General Chemistry with a Biological Focus (5 cr.; fall)
2. Organic Chemistry Selectives: (must choose one option)
   1. CHM 25500 Organic Chemistry (3 cr.; both) and CHM 25501 Organic Chemistry Lab (1 cr.; both) and
      CHM 25600 Organic Chemistry (3 cr.; both) and CHM 25601 Organic Chemistry Lab (1 cr.; both)
   2. CHM 26505 Organic Chemistry (3 cr.; fall) and CHM 26300 Organic Chemistry Lab (1 cr.; fall) and
      CHM 26605 Organic Chemistry (3 cr.; spring) and CHM 26400 Organic Chemistry Lab (1 cr.; spring)
3. Chemistry Selectives: (must choose one of the following options)
   A. Analytical Chemistry: BCHM 22100 Analytical Biochemistry (3 cr.; both) or CHM 32100 Analytical Chemistry I (4 cr.; fall)
   B. Biochemistry: BCHM 56100 General Biochemistry I (3 cr.; both) or CHM 33900 Biochemistry: A Molecular Approach (3 cr.; spring) or CHM 53300 Introductory Biochemistry (3 cr.; fall)
   C. Physical Chemistry: CHM 37200 Physical Chemistry (4 cr.; spring) or CHM 37300 Physical Chemistry (3 cr.; fall)

PHYSICS Selectives: One of these two options:
1. PHYS 23300 Physics for Life Sciences I (4 cr.; both) and PHYS 23400 Physics for Life Sciences II (4 cr.; both)
2. PHYS 17200 Modern Mechanics (4 cr.; both) and one of the following two choices:
   A. PHYS 27200 Electric and Magnetic Interactions (4 cr.; both) or
   B. PHYS 24100 Electricity and Optics (3 cr.; both) and PHYS 25200 Electricity and Optics Laboratory (1 cr.; spring)

UNIVERSITY CORE and COLLEGE OF SCIENCE CORE REQUIREMENTS
Composition and Presentation; Teambuilding and Collaboration; Language and Culture; Great Issues; General Education; Multidisciplinary Experience; Mathematics; Statistics; Computing (see handout).

FREE ELECTIVES
Approximately 8-25 credits

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1 This course may count as the Intermediate Biology Selective and as the College of Science Teambuilding and Collaboration requirement.
2 BIOL 43800 may be used for requirement #9 or for requirement #14, but not both.
3 (Omitted)
4 This course may be used for #12, #13, or #14. It may be used for #12 and #13, or #12 and #14. It may not be used for #13 and #14.
5 This course may count for requirement #13 or #14, but NOT for both.
6 This course may count for the Biology Selective course and as the College of Science Great Issues requirement.
7 Students who select 12901 for General Chemistry must take CHM 33900 and 33901. CHM 33900 counts for the Chemistry Selective. Students who end up with Special Case approval for some other Gen Chem courses may choose the other Chem Selective options.

EEEB 3/16