

Mechanical Engineering Major Courses (43 credits) (<https://engineering.purdue.edu/ME/Academics/Undergraduate/index.html>)

- | | |
|---|---|
| (3) ME 20000 - Thermodynamics I | (4) ME 31500 - Heat and Mass Transfer |
| (3) ME 27000 - Basic Mechanics I | (3) ME 32300 - Mechanics of Materials |
| (3) ME 26300 - ME Design, Innov. & Entre. | (4) ME 35200 - Machine Design I |
| (3) ME 27400 - Basic Mechanics II | (3) ME 36500 - Systems and Measurements |
| (1) ME 29000 - ME Professional Seminar | (3) ME 37500 - System Modeling and Analysis |
| (4) ME 30900 - Fluid Mechanics | (3) ME 46300 - Engineering Design |
| (6) ME 30000/ME 45200/ME 47500 - 2 of 3 required - Satisfies Restricted Elective requirements | |

ME Professional Selectives (12 credits) : <https://engineering.purdue.edu/ME/Academics/Undergraduate/METechElects.html>

- | | |
|---------------------------|----------------------------|
| (3) Technical Elective I | (3) Technical Elective III |
| (3) Technical Elective II | (3) Technical Elective IV |

First-Year Engineering Course Requirements (29-31 credits) * (<http://www.purdue.edu/provost/initiatives/curriculum/course.html>)

- | |
|---|
| (4) CHM 11500 - <i>General Chemistry I (Science Outcome I)</i> |
| (3) Oral Communication Elective* - COM 11400 Recommended (<i>Oral Communication Outcome</i>) |
| (4/3) Written Communication Elective* - ENGL 10600 Recommended - (<i>Written Communication Outcome</i>) |
| (2) ENGR 13100- Transforming Ideas to Innovation I (<i>Information Literacy Outcome</i>) |
| (2) ENGR 13200 - Transforming Ideas to Innovation II |
| (4) MA 16500 - Analytic Geometry and Calculus I (<i>Quantitative Reasoning Outcome</i>) |
| (4) MA 16600 - Analytic Geometry and Calculus II |
| (4) PHYS 17200- Modern Mechanics (<i>Science Outcome II</i>) |
| (4/3) Science Selective (BIOL 11000/CHM 11600/CS 15900) - Select one from list (all options accepted). |

Other School/Department Course Requirements (23 credits)

- | |
|---|
| (2) CGT 16300 - Graphical Communication and Spatial Analysis (Not included in ME Core GPA) |
| (3) ECE 20100 - Linear Circuit Analysis |
| (1) ECE 20700 - Electronic Measurement Techniques |
| (4) MA 26100 - Multivariate Calculus |
| (4) MA 26200 - Linear Algebra and Differential Equations |
| (3) MA 30300 - Differential Equations and Partial Differential Equations for Engineering and the Sciences |
| (3) MSE 23000 - Structure and Properties of Materials |
| (3) PHYS 24100 - Electricity and Optics |

General Education Selectives (18 credits) and Free Elective (3 Credits)

(<https://engineering.purdue.edu/ME/Academics/Undergraduate/GenEds.html>)

- | | | | |
|---------------------|--------------|-----|-----|
| (3) Econ El. (B/SS) | (3) G.E.-II | () | () |
| (3) WAC (Hum) | (3) G.E.-III | () | () |
| (3) G.E.-I | (3) G.E.-IV | () | () |
| (3) Free Elective | | | |

University Core Requirements

Human Cultures Humanities

WAC El.

Science, Technology & Society
Selective

ME 29000

Human Cultures Behavioral/Social Science

ECON El.

Written Communication

Written Comm. El.

Information Literacy

ENGR 13100

Oral Communication

Oral Comm. El.

Science Selective

CHM 11500

Quantitative Reasoning

MA 16500

Science Selective

PHYS 17200

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

Degree Works is knowledge source for specific requirements and completion

Mechanical Engineering<https://engineering.purdue.edu/ME/Academics/Undergraduate/index.html>**Recommended Plan-of-Study (POS):**

Credits	Fall 1st Year	Prerequisite	Credits	Spring 1st Year	Prerequisite
4	CHM 11500 (<i>Science I</i>)		2	ENGR 13200	ENGR 13100
3-4	Written Communication - ENGL10600 Recommended (<i>Written Communication</i>)		3	Oral Communication – COM 11400 Recommended (<i>Oral Communication</i>)	
2	ENGR 13100 (<i>Inform. Lit.</i>)		4	MA 16600	MA 16500
4	MA 16500 (<i>Quant. Reason.</i>)		4	PHYS 17200 (<i>Science II</i>)	MA 16500
3	General Education El. I		3-4	Science Selective	
16-17			16-17		

Credits	Fall 2nd Year	Prerequisite	Credits	Spring 2nd Year	Prerequisite
2	CGT 16300		3	ECE 20100	ENGR 13100, PHYS 17200, MA 26100 co-req.
4	MA 26100	MA 16600	1	ECE 20700	ECE 20100 co-req.
3	ME 20000	CHM 11500, ENGR 13200 co-req., MA 26100 co-req.	4	MA 26200	MA 26100
3	ME 27000	ENGR 13200 co-req., MA 26100 co-req., PHYS 17200	3	ME 26300	CGT 16300 co-req., MA 26200 co-req., ME 20000, ME 27000, ME 29000 co-req.
1	ME 29000	Oral Com., Written Com. ME Status	3	ME 27400	ME 27000, MA 26200 co-req.
3	PHYS 24100	MA 16600 co-req., PHYS 17200	3	Economics Elective (<i>B/SS</i>)	
16			17		

Credits	Fall 3rd Year	Prerequisite	Credits	Spring 3rd Year	Prerequisite
3	MA 30300	MA 26200	4	ME 35200	ME 26300, ME 27400, ME 32300
4	ME 30900	ME 26300, ME 27400, MA 26200	3	ME 37500	MA 30300, ME 36500
3	ME 32300	ME 27000	3	MSE 23000	CHM 11500, MA 16500
3	ME 36500	ECE 20100, ECE 20700, ME 27400	3	General Education Elective II	Varies
3	World Affairs and Cultures Elective (<i>Humanities</i>)		3	Technical Elective I	Varies
16			16		

Credits	Fall 4th Year	Prerequisite	Credits	Spring 4th Year	Prerequisite
4	ME 31500	MA 30300, ME 30900, ME 36500	3	ME 46300	ME 31500, ME 35200, ME 37500, MSE 23000
3	Restricted Elective I	Varies	3	Restricted Elective II	Varies
3	Technical Elective II	Varies	3	Technical Elective III	Varies
3	General Education El. III	Varies	3	Technical Elective IV	Varies
3	Free Elective	Varies	3	General Education Elective IV	Varies
16			15		

128 semester credits required for Bachelor of Science degree.**2.0 Graduation GPA required for Bachelor of Science degree****2.0 ME Core GPA required for Bachelor of Science degree**

The student is ultimately responsible for knowing and completing all degree requirements.**Degree Works is knowledge source for specific requirements and completion**

World and Cultural Affairs (WAC) Selective (3 cr. Hrs.)

(Also counts as the Human Cultures: Humanities (H) Foundational Outcomes)

As part of the General Education Program, students must complete 3 credit hours to satisfy the *World and Cultural Affairs Selective* requirement. Any course shown below will satisfy the *World and Cultural Affairs Selective* as well as the *Human Cultures: Humanities (H) Foundational Outcome*. **All Introductory Courses are preceded by an asterisk (*)**.

ARAB *10100, 10200, 20100, 20200, 30100, 30200 Standard Arabic Levels I-VI
ARAB *28000 - Arabic Culture
ASL *10100, 10200, 20100, 20200
CHNS *10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200 Chinese Levels I-VIII
CLCS *23010 - Survey of Greek Literature in Translation
CLCS *23100 - Survey of Latin Literature
CMPL *26600 - Intro to World Lit Beg - 1600
CMPL *26700 - World Lit from 1600 to Today
FR *10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200 French Levels I-VIII
FR 33000 - French Cinema
GER *10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200 German Levels I-VIII
GER *23000 - German Literature in Translation
GER 33000 - German Cinema
GREK *10100, 10200, 20100, 20200 Ancient Greek Levels I-IV
HEBR *10100, 10200, 20100, 20200 Modern Hebrew Levels I-IV
HEBR *12100, 12200, 22100, 22200 Biblical Hebrew Levels I-IV
HEBR *28000 - Modern Israel
HIST *10300 - Intro to the Medieval World
HIST *10400 - Intro to the Modern World
HIST *10500 - Survey of Global World
HIST *21000 - The Making of Modern Africa
HIST *24000 - East Asia and Its Historical Tradition
HIST *24100 - East Asia in the Modern World
HIST *24300 - South Asian History and Civilizations
HIST *24500 - Middle East History and Culture
HIST *24600 - Modern Middle East and North Africa
HIST *27100 - Latin American History to 1824
HIST *27200 - Latin American History from 1824
HIST 34000 - Modern China
HIST 35100 - The Second World War
HIST 35900 - Gender in East Asian History
ITAL *10100, 10200, 20100, 20200, 30100, 30200 Italian Levels I-VI
ITAL *28000 - Italian Culture and Civilization
ITAL *28100 - The Italian Renaissance
ITAL 33000 - Italian Cinema
ITAL 33300 - The Spirit of Italian Comedy
ITAL 38000 - Italian Culture and Civilization
JPNS *10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200 Japanese Levels I-VIII

JWST 33000 - Introduction to Jewish Studies
LATN *10100, 10200, 20100, 20200 Latin Studies I-IV
LATN 34300 - Roman Oratory
LATN 34400 - Roman Epic
LATN 34500 - Roman Elegy
LATN 34600 - Roman Rhetoric
LATN 34700 - Roman Comedy
LATN 44200 - Roman Lyric Poetry
LATN 44400 - Roman Philosophers
LATN 44500 - Roman Encyclopedists
LATN 44600 - Roman Historians
LC *23900 - Contemporary Foreign Women Writers in Translation
LC 33300 - The Middle Ages of Film
PHIL *11400 - Global Moral Issues
PHIL *23000 - Religions of the East
PTGS *10100, 10200, 20100, 20200, 30100, 30200 Portuguese Levels I-VI
REL *23000 - Religions of the East
RUSS *10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200 Russian Levels I-VIII
RUSS *28100 - Post Soviet Experience
RUSS 33000 - Russian and East European Cinema
SPAN *10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200 Spanish Levels I-VIII
SPAN * 23500 - Spanish American Literature in Translation
SPAN 30500 - Spanish For Heritage Spkr
SPAN 30801 - Adv Spanish For Heritage Spkr
SPAN 33000 - Film in Spain and Hispanic America

THE SCHOOL OF MECHANICAL ENGINEERING GUIDE TO THE GENERAL EDUCATION PROGRAM

Students admitted to ME prior to Fall 2014, [click here](#). Students admitted to ME on or after Fall 2014, see below.

The Purdue University School of Mechanical Engineering curriculum includes a strong component in General Education to provide students an integrated and well-rounded program in the humanities, fine arts, and social sciences. Following completion of the required freshman year courses in written communications (ENGL 106 or other approved option) and oral communications (COM 114 or other approved option), each student, with the assistance of an academic advisor, selects six three-credit hour courses to satisfy the General Education component of the ME curriculum.

Program Requirements

1. **Credit Requirements** - A minimum of 18 credit hours in approved humanities and social sciences selectives are required. (A list of preapproved courses is appended below).
2. **Required Selectives** - Of the 18 credit hours total, 6 credit hours must satisfy the following required selective categories.
 - o ✓ *Economics Selective* (3 crs.) - either ECON 25100 "Microeconomics" or ECON 252 "Macroeconomics" will satisfy the Economics Slective. The course chosen will also satisfy the Human Cultures: Behavior/Social Sciences (BSS) Foundational Outcome.
 - o ✓ *World Affairs and Cultures Selective-WAC* (3 crs.) - any course on the pre-approved WAC list will satisfy this requirement as well as the Human Cultures: Humanities (H) Foundational Outcome.
- *3. **Depth and Breadth Requirements** - Within the 18 credit hours, both depth and breadth must be demonstrated.
 - o *Depth* - A minimum of 6 credit hours must be taken in at least one department. This insures depth in at least one department.
 - o *Breadth* - No more that 12 credit hours can be taken in one department. This insures exposure to at least two different departments.
- *4. **Non-Introductory Course Requirements** - At least 6 credit hours must come from non-introductory courses.
 - o *Non-Introductory Courses* (Minimum of 6 credits) - Preapproved courses at the 300-level or above, or lower-division courses with a required prerequisite in the same department. c
 - o *Introductory Courses* (Maximum of 12 credits) - Preapproved lower-division (100 or 200 level) courses with no prerequisite in the same department. **All Introductory Courses are indicated by an asterisk (*)**.
5. **Foreign Language Requirement** - If a foreign language course is used to satisfy part of the requirements, at least 6 credit hours must be taken in the same language (e.g., to receive credit for SPAN 101 you must complete SPAN 102). Also, credit is not allowed for language courses in the student's native tongue(s), although literature, culture, drama and related courses are allowed.
6. **Integrated Program** - To encourage an integrated program, no more than 6 credit hours of general education electives can be taken in one semester. c

7. **Consideration of Exceptions** - The appended list of preapproved general education selectives, while extensive, is not exhaustive. To have an unlisted course considered for approval, a written request should be submitted to Prof. Jones in ME 2008.

Selection of a suitable set of humanities and/or social science courses presents some students with a challenge. It is difficult to select 6 courses from among several hundred; a frequently used method is to pick a course which has a reputation for being easy, requiring minimal work, and guaranteeing a high grade. Selecting approximately 15 percent of the total credits required for graduation by this method is not wise. The guidelines listed below are intended to assist in planning an effective General Education program:

1. **Explore Areas of Interest** - The student should explore different areas in the humanities, fine arts, and social sciences.
2. **Develop a Coherent Program** - The program should have a unified framework and constitute a coherent educational experience. You may want to consider getting a minor in one of the departments listed below. If you are interested in a minor, please see the offering department for details of the requirements.
3. **Non-Approved Subjects** - Courses treating subjects such as accounting, management, personnel administration, band, and ROTC may be of value to mechanical engineering students but most do not fulfill the purpose of the General Education program.
4. **Grade Options** - The pass/not pass option may not be used for any courses required for graduation. All courses counted toward any graduation requirement must be taken for a grade. However, any extra courses not being utilized for graduation may be taken pass/not pass.

GENERAL EDUCATION SELECTIVES - PREAPPROVED HUMANITIES AND SOCIAL SCIENCE COURSES

Note: Appropriate 500 level courses may also be approved by the student's advisor.

**Introductory courses are preceded by an asterisk.*

Aerospace Studies (AFT): 35100, 36100

African American Studies (AAS): *27100, All 300-level or higher AAS courses.

Agricultural Economics (AGEC): *25000, 34000, 40600, 41000, 41500, 45000

American Sign Language (ASL): *10100, 10200, 20100, 20200, *28000

American Studies (AMST): *20100, 30100

Anthropology (ANTH): *10000, *20100, *20300, *20400, *20500, *21000, *23000, *23500, *25000, *28200, All 300-level or higher ANTH courses.

Arabic (ARAB): *10100, 10200, 20100, 20200, All 300-level or higher ARAB courses.

Art and Design (AD): *10500, 10600, 11400, *11700, *11300, *11900, *12500, 13000, 20000, 20500, 20600, 21300, *21500, 22000, 22200, *22600, *22700, 23000, *23300, 23500, *23600, 24000, *24200, 24600, 25000, 25100, *25500, 25600, 26000, 26200, *26500, *26600, *26700, *27000, *27100, *27500, 28500, All 300-level or higher AD classes.

Chinese (CHNS): *10100, 10200, 20100, 20200, 22000, 22400, *23000, *24100, 28000, *28500, All 300-level or higher CHNS courses.

Classics (CLCS): *23000, *23700, 33000, 33100, 33300, 33500, 33600, 33700, 33900, 38500

Communications (COM): *10200, *20400, 21000, *21200, *21700, *22400, 23500, 24000, *25000, *25100, 25300, 25600, All 300-level or higher COM courses.

Consumer Sciences and Retailing (CSR): 34200

Dance (DANC): *10100, *10200, *10300, *13000, *13500, 14000, 14400, 20100, 20200, 20300, *23000, 24000, 24100, *25000, All 300-level or higher DANC courses. (**Caution:** Most DANC courses are only 1 or 2 credits)

Earth Atmospheric and Planetary Science (EAPS): 30100, 37500

Economics (ECON): *25100, *25200, All 300-level or higher ECON courses, except for ECON 45100.

Educational and Psychological Studies (EDPS): *23500, 30000, 31500

English (ENGL): *20100, 20500, *22700, *23000, *23100, *23200, *23300, *23400, *23500, *23700, *23800, *23900, *24000, *24100, *25000, *25700, *25800, *26200, *26400, *26600, *26700, *27600, *27900, 28600, All 300-level or higher ENGL courses, except for ENGL42100.

Foreign Languages and Literatures (FLL): *10100, 10200, 20100, 20200, *23000, *23300, *23500, *23900, *26100, All 300-level or higher FLL courses.

French (FR): *10100, 10200, 10300, 11200, 20100, 20200, 21100, 21200, 22300, *23000, *23100, 24100, 26000, All 300-level or higher FR courses.

General Studies (GS): *10000, *10100

German (GER): *10100, 10200, 10300, 11200, 20100, 20200, 21100, 21200, 22300, 22400, *23000, *23100, 24100, 28000, All 300-level or higher GER courses.

Greek (GREK): *10100, 10200, 20100, 20200, All 300-level or higher GREK courses.

Hebrew (HEBR): *10100, 10200, 12100, 20100, 20200, All 300-level HEBR courses.

History (HIST): *10200, *10300, *10400, *10500, *15100, *15200, *22800, *22900, *24000, *24100, *24300, *24500, *24600, 25000, *27100, *27200, 29000, All 300-level or higher HIST courses.

Human Development and Family Studies (HDFS): *20100, *21000, *25500, 26000, *28000, All 300-level or higher HDFS courses.

Italian (ITAL): *10100, 10200, 10500, 11200, 20100, 20200, 21100, 21200, 23100, 24100, 26000, All 300-level or higher ITAL courses.

Japanese (JPNS): *10100, 10200, 20100, 20200, *23000, 24100, *28000, All 300-level or higher JPNS courses.

Jewish Studies (JWST): 33000

Latin (LATN): *10100, 10200, 20100, 20200, All 300-level or higher LATN courses.

Linguistics (LING): *20100

Music History and Theory (MUS): *25000, 26100, All 300-level or higher MUS courses.

Naval Science (NS): *21300, *21400, 41300, 44000

Organizational Leadership and Supervision (OLS): *27400, *28400, 38600

Philosophy (PHIL): *11000, *11100, *11400, *20600, *21900, *22100, *22300, *22500, *23000, *23100, *24000, *24200, *26000, *27000, *27500, *28000, *29000, All 300-level or higher PHIL courses.

Political Science (POL): *10100, *12000, *13000, *14100, 15000, *19000, 20000, *22200, *22300, 23000, *23100, *23200, *23500, *23700, *29000, All 300-level or higher POL courses.

Portuguese (PTGS): *10100, 10200, 10500, 11200, 20100, 20200, 21100, 21200, All 300-level or higher PTGS courses.

Psychological Sciences (PSY): *12000, 12100, 20000, 20100, 21300, 22000, 22200, 22500, 23000, 23500, 23600, 23900, 24000, 24100, 24200, 24400, 25000, 25100, 27200, 28500, All 300-level or higher PSY courses.

Religious Studies (REL): *20000, *20100, *20300, *20400, 23000, 23100, 25000, All 300-level or higher REL courses.

Russian (RUSS): *10100, 10200, *11100, 11200, 20100, 20200, 21100, 21200, 22300, *23000, *23100, *23200, *23300, *23400, *23600, *23700, 24100, *28100, *28900, All 300-level or higher RUSS courses.

Sociology (SOC): *10000, *22000, *27500, All 300-level or higher SOC courses.

Spanish (SPAN): *10100, 10200, 10300, 11200, 20100, 20200, 21100, 21200, 22400, 23000, *23100, *23500, 24100, 28000, All 300-level or higher SPAN courses.

Speech Language and Hearing Science (SLHS): *11500, *22700, 30900

Theatre (THTR): *13300, *16000, *20100, 21300, 23300, *25300, *25400, *25600, *26300, *26400, 27000, All 300-level or higher THTR courses.

Women's Gender and Sexuality Studies (WGSS): *28000, *28200, All 300-level or higher WGSS courses.

Youth Development and Agricultural Education (YDAE) 49100

Technical Selectives in the Mechanical Engineering Curriculum

The Mechanical Engineering curriculum (program 284) includes 12 hours of professional electives as a requirement for the degree of Bachelor of Science in Mechanical Engineering. The technical selective program enables students to specialize their background in a technical area of special interest (e.g., automotive, aerospace, biotechnology, etc.)

The purpose of this document is to suggest specific courses that students may wish to consider for their technical selective program. Generally, courses can be selected from the broad classifications listed below.

1. Non-required ME 300, 400 and 500 level courses.
2. Physics courses of level higher than PHYS 241.
3. Chemistry courses requiring CHM 116 or 124 as prerequisites.
4. Advanced biology courses and veterinary science courses.
5. Mathematics courses more advanced than MA 303.
6. Technical Writing, ENGL 421.
7. 300, 400, or 500 level courses in any engineering school other than mechanical engineering that are not duplicates of other courses taken.

However, not all courses within these classifications are acceptable for professional elective credit. Before registering for a course, be sure it appears in the list of pre-approved professional electives provided below. If a course does not appear on the pre-approved list, a written request (or email) may be submitted to the Undergraduate Office to have a course considered for technical selective credit.

To assist students in their selection of technical selectives, the list of pre-approved courses is divided into 40 topic areas. Neither the list of topic areas, nor the list of pre-approved courses within each area, is intended to be all-inclusive. Students should refer to the appropriate undergraduate catalog for course description and prerequisite information or click on any of the course links below for online course information.

Students are encouraged to discuss their career plans and technical selective program with faculty members whose expertise are in their area of special interest. Students may wish to consider 3-6 credits of ME 497 projects to study contemporary areas of research not covered by the standard curriculum. Undergraduate research is an excellent option for students considering graduate study in engineering.

TECHNICAL SELECTIVE TOPICS

Acoustics and Noise Control
Aerodynamics
Applied Mathematics
Applied Thermal Sciences
Automation
Automotive Engineering
Biochemistry
Biomedical Engineering
Combustion
Computer Aided Design
Computer Science
Construction Engineering
Control Systems
Design / Mechanical
Dynamics
Earth and Atmospheric Sciences
Electrical Engineering
Energy Systems
Engineering Professionalism
Environment
Fire Protection Engineering
Fluid Mechanics
Heat and Mass Transfer
Hydraulics
Management
Manufacturing
Materials
Mathematics
Measurement Systems
Nuclear Engineering
Numerical Analysis
Physics
Plant Engineering
Power Engineering
Pre-Medical
Process Engineering
Propulsion
Robotics
Software Engineering for Manufacturing Automation
Stress Analysis
Structures
Thermodynamics

Turbomachinery
Vibrations

TECHNICAL SELECTIVE LIST

1. **Acoustics and Noise Control** (also see Aerodynamics, Vibrations)

- ✓ME 413 Noise Control
- ✓ME 513 Engineering Acoustics
- ✓ME 563 Mechanical Vibrations
- ✓ME 579 Digital Signal Processing
- ✓ME 585 Instrumentation for Engineering Measurement
- ✓ME 597A Experimental Structural Dynamics
- ✓ECE 521 Acoustics in Engineering and Medicine

2. **Aerodynamics**

- ✓A&AE 334 Aerodynamics
- ✓A&AE 340 Dynamics & Vibrations
- ✓A&AE 372 Jet Propulsion Power Plants
- ✓A&AE 414 Compressible Aerodynamics
- ✓A&AE 416 Viscous Flows
- A&AE 418 Zero Gravity Flight Experiment
- A&AE 512 Computational Aerodynamics
- A&AE 513 Transonic Aerodynamics
- A&AE 514 Matrix Methods in Aerodynamics
- A&AE 515 Aerodynamics of V/STOL Vehicles
- A&AE 517 Unsteady Aerodynamics
- A&AE 520 Experimental Aerodynamics
- A&AE 532 Orbital Mechanics
- A&AE 550 Multidisciplinary Design Optimization

3. **Applied Thermal Sciences** (also see Automotive Engineering, Combustion, Fluid Mechanics, Heat and Mass Transfer, Power Engineering, Propulsion, Thermodynamics)

- ME 418 Engineering of Environmental Systems and Equipment
- ME 430 Power Engineering
- ME 433 Principles of Turbomachinery
- ME 438 Gas Turbine Engines
- ME 440 Internal Combustion Engines
- ME 518 Analysis of Energy Utilization Systems

4. **Applied Mathematics** (also see Numerical Analysis)

MA 301 Introduction to Proof Through Real Analysis
MA 341 Foundations Through Analysis
MA 351 Elementary Linear Algebra
MA 375 Introduction to Discrete Mathematics
MA 410 Elements of Vector Calculus
MA 425 Elements of Complex Analysis
MA 510 Vector Calculus
MA 511 Linear Analysis
MA 520 Boundary Value Problems of Differential Equations
MA 527 Advanced Mathematics for Engineers and Physicists I
ABE 450 Finite Element Method in Design and Optimization

5. **Architectural Engineering**

CE 311 Architectural Engineering
CE 497 Div. 3 Architecture & Technology

6. **Earth and Atmospheric Sciences**

ASTR 363 Intermediate Astronomy I
ASTR 364 Intermediate Astronomy II
ASTR 370 Cosmology
EAS 403 Physical Oceanography
EAS 421 Atmospheric Thermodynamics
EAS 422 Atmospheric Dynamics I
EAS 423 Atmospheric Dynamics II

7. **Automation** (see Control Systems, Manufacturing, Robotics, Software Engineering for Manufacturing Automation)

8. **Automotive Engineering** (also see Acoustics and Noise Control, Control Systems, and Vibrations)

ME 440 Internal combustion Engines
ME 455 Vehicle Design and Fabrication
ME 565 Vehicle Dynamics
ABE 435 Hydraulic Control Systems for Mobile Equipment
ABE 545 Design of Off-Highway Vehicles
CE 463 Highway Transportation Characteristics
CE 557 Air Quality Management

9. Biochemistry

BCHM 307 Biochemistry

10. Biomedical Engineering

ME 508 Heat Transfer in Biomedical Systems
ME 577 Human Motion Kinetics
CHE 461 Biomedical Engineering (1 credit)
CHM 255 Organic Chemistry
CHM 255L Organic Chemistry Laboratory
CHM 256 Organic Chemistry
CHM 256L Organic Chemistry Laboratory
ECE 520 Topics in Bioengineering (1 credit)
ECE 521 Acoustics in Engineering and Medicine
ECE 522 Problems in the Measurement of Physiological Events (4 credits)
BIOL 110 Fundamentals of Biology I
BIOL 111 Fundamentals of Biology II
BIOL 131-132 Development, Structure and Function of Organisms
BIOL 231-232 Cell Structure and Function
BIOL 241-242 Genetics and Molecular Biology
BIOL 295E The Biology of the Living Cell
BIOL 301 Anatomy and Physiology
BIOL 302 Anatomy and Physiology
BNUC 400 Radiopharmaceuticals
HSCI 312 Introductory Bionucleonics
VAN 510 Human Gross Anatomy
VPH 520 Systemic Mammalian Physiology

11. Combustion

ME 430 Power Engineering
ME 501 Statistical Thermodynamics

ME 525 Combustion

ME 540 Combustion in Internal Combustion Engines

12. Computer Aided Design (also see Design)

ME 444 Computer Aided Design

ME 561 Optimal Design: Theory with Practice

ME 573 Interactive Computer Graphics

ME 574 Advanced Computer Graphics Application

ME 576 Computer Control of Manufacturing Processes

ME 586 Microprocessors in Electromechanical Systems

IE 575 Computer Aided Manufacturing

13. Computer Science

CS 240 Programming Laboratory (C programming language)

CS 250 Computer Architecture

CS 251 Data Structures

CS 252 Systems Programming

CS 307 Software Engineering I*

CS 314 Numerical Methods

CS 334 Fundamentals of Computer Graphics

CS 352 Compilers: Principles and Practice

CS 354 Operating Systems

CS 381 Introduction to the Analysis of Algorithms

CS 471 Introduction to Artificial Intelligence

CS 565 Programming Languages

14. Construction Engineering

CE 321 Construction Planning and Scheduling

CE 355 Engineering Environmental Sustainability

CE 361 Transportation Engineering

CE 424 Human Resource Management in Construction

CE 426 Construction Cost Control Concepts

CE 485 Legal Aspects of Construction Engineering

CE 497 Leadership and Advanced Project Management

CE 524 Legal Aspects in Engineering Practice

15. Control Systems (also see Robotics)

ME 575 Theory and Design of Control Systems
ME 576 Computer Control of Manufacturing Processes
ME 578 Digital Control
ME 586 Microprocessors in Electromechanical Systems
ME 579 Digital Signal Processing
A&AE 361 Introduction to Random Variables in Engineering
A&AE 564 Systems Analysis and Synthesis
ABE 435 Hydraulic Control Systems for Mobile Equipment
ECE 301 Signals and Systems
ECE 321 Electromechanical Motion Devices
ECE 445 Modern Filter Design
ECE 483 Digital Control Systems - Analysis and Design
IE 575 Computer-Aided Manufacturing

16. Design - Mechanical (also see Computer Aided Design, Control Systems, Dynamics, Materials, Stress Analysis, Vibrations)

ABE 501 Welding Engineering
EPCS 301 Jr. Participation in Engineering Projects in Community Service
(EPICS) 1 credit/semester
EPCS 302 Jr. Participation in Engineering Projects in Community Service
(EPICS) 2 credits/semester
ME 473 Engineering Design Using Modern Materials
EPCS 401 Sr. Participation in Engineering Projects in Community Service
(EPICS) 1 credit/semester
EPCS 402 Sr. Participation in Engineering Projects in Community Service
(EPICS) 2 credits/semester
ME 553 Product and Process Design
ME 556 Lubrication, Friction & Wear
ME 557 Design for Manufacturability
ME 560 Kinematics
ME 561 Optimal Design: Theory with Practice
ME 565 Vehicle Dynamics
ME 566 Mechanics of Machinery
ME 567 Dynamical Problems in Design
ME 569 Mechanical Behavior of Materials
ME 570 Machine Design
ME 572 Analysis and Design of Robotic Manipulators
ME 571 Reliability Based Design
ME 595R Intellectual Property

ME 597 Sustainable Design and Manufacturing
ABE 450 Finite Element Method in Design and Optimization

17. Dynamics (also see Control Systems, Robotics, Systems and Control, Vibrations)

ME 560 Kinematics
ME 562 Advanced Dynamics
ME 565 Vehicle Dynamics
ME 567 Dynamical Problems in Design
ME 580 Nonlinear Engineering Systems
ME 597A Experimental Structural Dynamics
A&AE 340 Dynamics and Vibrations

18. Electrical Engineering

ME 588 Mechatronics
ECE 202 Linear Circuit Analysis II
ECE 255 Introduction to Electronics Analysis and Design
ECE 266 Digital Logic Design
ECE 270 Introduction to Digital System Design
ECE 301 Signals and Systems
ECE 302 Probabilistic Methods in Electrical Engineering
ECE 311 Electric and Magnetic Fields
ECE 362 Microprocessor Systems and Interfacing
PHYS 330 Intermediate Electricity and Magnetism

19. Energy Systems

ME 418 Engineering of Environmental Systems and Equipment
ME 430 Power Engineering
ME 440 Internal Combustion Engines
ME 518 Analysis of Energy Utilization Systems
NUCL 402 Engineering of Nuclear Power Systems

20. Engineering Professionalism

ME 492 Technology and Values

CE 394 Civil Engineering History, Ethics, Engineering Economic Analysis, and Case Studies

(IE 343 and CE 394 cannot both be taken for Technical Elective credit.)

CE 524 Legal Aspects in Engineering Practice

IE 558 Safety Engineering

IE 577 Human Factors in Engineering

OBHR 330 Organizational Behavior

(Only open to students pursuing a MNGT Minor.)

21. Environment

ME 413 Noise Control

CE 350 Environmental Engineering

CE 352 Biological Principles of Environmental Engineering

CE 353 Physico-Chemical Principles of Environmental Engineering

CE 456 Wastewater Treatment

CE 457 Air Pollution Control and Design

CE 556 Solid Waste Collection and Disposal

CE 557 Air Quality Management

CE 558 Sampling and Analysis of Source and Atmospheric Air Contaminants

BIOL 585 Ecology

BIOL 590 Theoretical Population Biology

22. Fire Protection Engineering

IE 558 Safety Engineering

ME 418 Engineering of Environmental Systems and Equipment

ME 430 Power Engineering

ME 444 Computer Aided Design and Prototyping

ME 505 Intermediate Heat Transfer

ME 509 Intermediate Fluid Mechanics

ME 525 Combustion

ME 581 Numerical Methods in Mechanical Engineering

CE 355 Engineering Environmental Sustainability

CE 524 Legal Aspects in Engineering Practice

NUCL 200 Introduction to Nuclear Engineering

23. Fluid Mechanics (also see Aerodynamics, Atmospheric Sciences, Hydraulics, Propulsion, Turbomachinery)

ME 506 Two-Phase Flow and Heat Transfer

ME 509 Intermediate Fluid Mechanics

ME 510 Gas Dynamics

ME 597V Particulate Systems

ME 597W Microscale Physical Processes

A&AE 516 Computational Fluid Mechanics

24. Heat and Mass Transfer

ME 505 Heat and Mass Transfer

ME 506 Two-Phase Flow and Heat Transfer

ME 507 Laser Processing

ME 518 Analysis of Energy Utilization Systems

25. Hydraulics

CE 440 Urban Hydraulics

CE 442 Introduction to Hydrology

CE 540 Open Channel Hydraulics

CE 542 Hydrology

26. Management

MGMT 201 Management Accounting I (pre-req MGMT 200)

MGMT 304 Introduction to Financial Management

MGMT 306 Management Science (pre-req. MGMT 305)

MGMT 310 Financial Management

MGMT 323 Introduction to Market Analysis

MGMT 324 Marketing Management (pre-req MGMT 201 and ECON 252)

MGMT 350 Intermediate Accounting I (pre-req. MGMT 201)

MGMT 351 Intermediate Accounting II (pre-req. MGMT 350)

MGMT 354 Legal Foundations of Business I

MGMT 361 Operations Management (pre-req STAT 225)

MGMT 455 Legal Background for Business I

MGMT 44301 Management of Human Resources

OBHR 330 Introduction to Organizational Behavior
OBHR 428 Human Resource Management (pre-req OBHR 330 and MGMT 305)

27. Manufacturing (also see Control Systems)

ABE 501 Welding Engineering
ME 363 Principles and Practices of Manufacturing Processes
ME 557 Design for Manufacturability
ME 576 Computer Control of Manufacturing Processes
IE 343 Engineering Economics
 (IE 343 and CE 394 cannot both be taken for Technical Elective credit.)
IE 370 Manufacturing Processes I
 (IE 370 and ME 363 cannot both be taken for Technical Elective credit.)
IE 470 Manufacturing Processes II
IE 530 Quality Control
IE 570 Manufacturing Process Engineering
IE 574 Industrial Robotics and Flexible Assembly
IE 575 Computer-Aided Manufacturing
STAT 511 Statistical Methods

28. Materials (also see Stress Analysis)

ME 473 Engineering Design Using Modern Materials
ME 569 Mechanical Behavior of Materials
ME 559 Micromechanics of Materials
MSE 240 Processing and Properties of Materials
MSE 260 Thermodynamics of Materials
MSE 270 Atomistic Materials Science
MSE 330 Processing and Properties of Materials
MSE 370 Electrical, Optical & Magnetic Properties of Materials
MSE 382 Mechanical Response of Materials
MSE 540 High Temperature Alloys
CE 333 Civil Engineering Materials
CE 533 Physiochemical Properties of Materials
A&AE 554 Fatigue of Structures and Materials
A&AE 555 Mechanics of Composite Materials
A&AE 557 Inelastic Behavior of Materials and Structures

29. Mathematics

ECON 451 Gaming Theory
MA 301 An Introduction to Proof Through Real Analysis
MA 341 Foundations of Analysis
MA 351 Elementary Linear Algebra
MA 353 Linear Algebra II with Applications
MA 362 Topics in Vector Calculus
MA 364 Differential Equations
MA 366 Ordinary Differential Equations
MA 375 Introduction to Discrete Mathematics
MA 410 Elements of Vector Calculus
MA 416 Probability
MA 421 Linear Programming and Optimization Techniques
MA 425 Elements of Complex Analysis
MA 453 Elements of Algebra I
MA 460 Geometry
MA 462 Elementary Differential Geometry
MA 470
MA 474 Methods of Random Modeling

30. Measurement Systems

ME 579 Digital Signal Processing
ME 585 Instrumentation for Engineering Measurements
ME 586 Microprocessors in Electromechanical Systems
ME 587 Engineering Optics
ECE 554 Electronic Instrumentation and Control Circuits

31. Nuclear Engineering

NUCL 200 Introduction to Nuclear Engineering
NUCL 300 Nuclear Structure and Radiation Interactions
NUCL 310 Introduction to Neutron Transport
NUCL 402 Engineering of Nuclear Power Systems
NUCL 460 Introduction to Controlled Thermonuclear Fusion
NUCL 470 Fuel Cell Engineering
NUCL 497S Nuclear Engineering in Space Exploration
NUCL 501 Nuclear Engineering Principles
NUCL 504 Nuclear Engineering Experiments
NUCL 510 Nuclear Reactor Theory I

32. Numerical Analysis

ME 581 Numerical Methods in Mechanical Engineering
CS 414 Numerical Methods
CS 415 Computational Methods for Differential Equations
CS 514 Numerical Analysis
CS 515 Numerical Analysis of Linear Systems
A&AE 453 Matrix Methods in Aerospace Structures
A&AE 558 Finite Element Methods in Aerospace Structures
ABE 450 Finite Element Method in Design and Optimization
IE 335 Operations Research I
IE 535 Linear Programming
IE 537 Discrete Optimization Models and Algorithms

33. **Physics**

PHYS 310 Intermediate Mechanics
PHYS 322 Intermediate Optics
PHYS 330 Intermediate Electricity and Magnetism
PHYS 342 Modern Physics
PHYS 344 Modern Physics
PHYS 360 Quantum Mechanics
PHYS 415 Heat and Thermodynamics
PHYS 417 Statistical Physics
PHYS 515 Thermodynamics
PHYS 560 Stellar Evolution

34. **Plant Engineering** (also see Process Engineering, Power Engineering, Engineering Economics, Applied Thermal Sciences, Stress Analysis)

ME 413 Noise Control
ME 418 Engineering of Environmental Systems & Equipment
ME 518 Analysis of Energy Utilization Systems
CE 520 Construction Project Control Systems
IE 343 Engineering Economics
(IE 343 and CE 394 cannot both be taken for Technical Elective credit.)
IE 477 Work Methods and Measurement
IE 478 Production Planning and Control
IE 556 Job Design
IE 558 Safety Engineering

35. Power Engineering

ME 430 Power Engineering
ME 433 Principles of Turbomachinery
ME 518 Analysis of Energy Utilization Systems
ECE 321 Electromechanical Motion Devices
ECE 432 Elements of Power System Engineering
ECE 532 Computational Methods for Power System Analysis
NUCL 402 Engineering of Nuclear Power Systems
NUCL 500 Nuclear Engineering

36. Pre-Medical (<http://www.bio.purdue.edu/Academic/undergrad/ps2009/PREM2009.pdf>)

One Year of Biology with a Lab

BIOL 110

BIOL 111

Or

BIOL 131

BIOL 201

BIOL 202

BIOL 203

BIOL 204

BIOL 231/232

BIOL 242

One Year of General Chemistry with a Lab

CHM 115 (Required)

CHM 116 (Science Selective)

One Year of Organic Chemistry with a Lab

CHM 255/255L

CHM 256/256L

Or

CHM 261/263

CHM 262/264

One Year of PHYS with a Lab

PHYS 172 (Required)

PHYS 241/252 (PHYS 241 Required; PHYS 252 - TE)

One Year of English

ENGL 106/108 (Required)

One other ENGL course (GE)

37. Process Engineering

ABE 554 Transport Processes in Biological and Food Process Systems
ABE 555 Food Process Engineering Unit Operations
ABE 556 Food Plant Design and Economics
ABE 580 Process Engineering of Renewable Resources

38. Propulsion

ME 433 Principles of Turbomachinery
ME 438 Gas Turbine Engines
ME 510 Gas Dynamics
ME 533 Turbomachinery II
ME 538 Air Breathing Propulsion
A&AE 372 Jet Propulsion Power Plants
A&AE 439 Rocket Propulsion
A&AE 539 Solid Rocket Propulsion
A&AE 590P Hypersonic Propulsion

39. Robotics (also see control Systems, Dynamics)

ME 572 Analysis and Design of Robotic Manipulators
ME 588 Mechatronics
ECE 321 Electromechanical Motion Devices
ECE 569 Introduction to Robotic Systems
IE 574 Industrial Robotics and Flexible Assembly

40. Software Engineering for Manufacturing Automation

ME 573 Interactive Computer Graphics
ME 586 Microprocessors in Electromechanical Systems
ECE 362 Microprocessor Systems and Interfacing
ECE 373 Programming Languages for Artificial Intelligence
ECE 562 Introduction to Data Management and Artificial Intelligence
ECE 570 Programming Techniques for Artificial Intelligence
IE 557 Human-Computer Interaction
IE 559 Cognitive Engineering of Interactive Software
CS 307 Software Engineering I*
CS 565 Programming Languages*
*course has several prerequisites

41. Stress Analysis (also see Materials, Structures, Vibrations)

ME 582 Thermal Stress Analysis
A&AE 453 Matrix Methods in Aerospace Structures
A&AE 547 Experimental Stress Analysis
A&AE 553 Elasticity in Aerospace Engineering
A&AE 558 Finite Element Methods in Aerospace Structures
CE 595 Finite Elements in Elasticity

42. Structures (also see Materials, Stress Analysis, Vibrations)

A&AE 352 Structural Analysis I
A&AE 352L Structural Analysis I Lab. (1 credit)
A&AE 453 Matrix Methods in Aerospace Structures
A&AE 556 Aeroelasticity
A&AE 558 Finite Element Methods in Aerospace Structures
CE 371 Structural Analysis I
CE 474 Structural Analysis II
CE 570 Advanced Structural Mechanics
CE 573 Structural Dynamics

43. Thermodynamics (also see Applied Thermal Sciences, Combustion and Power Engineering)

ME 500 Thermodynamics
ME 501 Statistical Thermodynamics
ATMS 431 Atmospheric Thermodynamics
CHM 373 Physical Chemistry
CHE 510 Intermediate Chemical Engineering Thermodynamics
PHYS 415 Heat and Thermodynamics
PHYS 417 Statistical Physics
PHYS 515 Thermodynamics

44. Turbomachinery

A&AE 372 Jet Propulsion Power Plants
ME 433 Principles of Turbomachinery

ME 438 Gas Turbine Engines
ME 533 Turbomachinery II
ME 538 Air Breathing Propulsion

45. Vibrations

ME 513 Engineering Acoustics
ME 549 Practical Experience in Vibrations
ME 563 Mechanical Vibrations
ME 564 Vibration of Discretized Systems
ME 575 Theory and Design of Control Systems
ME 580 Nonlinear Engineering Systems
ME 585 Instrumentation for Engineering Measurement
A&AE 340 Dynamics and Vibrations
A&AE 556 Aeroelasticity
CE 573 Structural Dynamics

TECHNICAL SELECTIVE LIST (by Department)

A&AE 251 Introduction to Aerospace Design
A&AE 301 Signal Analysis for Aerospace Engineering
A&AE 334 Aerodynamics
A&AE 33401 Aerodynamics Laboratory (1 credit)
A&AE 340 Dynamics and Vibrations
A&AE 35103 Aerospace Systems Design
A&AE 35200 Structural Analysis I
A&AE 35201 Structural Analysis I Lab. (1 credit)
A&AE 361 Introduction to Random Variables in Engineering
A&AE 36400 Control System Analysis
A&AE 36401 Control Systems Laboratory (1 credit)
A&AE 372 Jet Propulsion Power Plant
A&AE 412 Introduction to Computational Fluid Dynamics
A&AE 414 Compressible Aerodynamics
A&AE 416 Viscous Flows
A&AE 418 Zero-Gravity Flight Experiment
A&AE 421 Flight Dynamics and Control
A&AE 439 Rocket Propulsion
A&AE 440 Spacecraft Attitude Dynamics
A&AE 443 Industrial Practices Seminar
A&AE 450 Spacecraft Design
A&AE 451 Aircraft Design
A&AE 453 Matrix Methods in Aerospace Structures

A&AE 512 Computational Aerodynamics
A&AE 513 Transonic Aerodynamics
A&AE 514 Matrix Methods in Aerodynamics
A&AE 515 Aerodynamics of V/STOL Vehicles
A&AE 517 Unsteady Aerodynamics
A&AE 519 Hypersonic Aerothermodynamics
A&AE 520 Experimental Aerodynamics
A&AE 532 Orbital Mechanics
A&AE 550 Multidisciplinary Design Optimization
ABE 330 Design of Machine Components
ABE 336 All Terrain Vehicle Design
ABE 435 Hydraulic Control Systems for Mobile Equipment
ABE 450 Finite Element Method in Design and Optimization
ABE 460 Sensors and Process Control
ABE 501 Welding Engineering
ABE 545 Design of Off-Highway Vehicles
ASM 345 Power Units and Power Trains
ASTR 363 The Solar System
ASTR 364 Stars and Galaxies
ASTR 370 Cosmology
BCHM 307 Biochemistry
BIOL 110 Fundamentals of Biology I
BIOL 111 Fundamentals of Biology II
BIOL 121 Biology I: Diversity, Ecology, and Behavior
BIOL 122 Laboratory in Biology I: Diversity, Ecology, and Behavior (2 credits)
BIOL 131 Biology II: Development, Structure, and Function of Organisms
BIOL 132 Laboratory in Biology II: Development, Structure, and Function of Organisms (2 credits)
BIOL 201 Human Anatomy and Physiology (2 credits)
BIOL 202 Human Anatomy and Physiology (2 credits)
BIOL 231 Biology III: Cell Structure and Function
BIOL 232 Laboratory in Biology III: Cell Structure and Function (2 credits)
BIOL 241 Biology IV: Genetics and Molecular Biology
BIOL 242 Laboratory in Biology IV: Genetics and Molecular Biology
BME 201 Biomolecules: Structure, Function, and Engineering Applications
BME 204 Biomechanics of Hard and Soft Tissues
BME 540 Biomechanics
BME 551 Tissue Engineering
CE 222 Life Cycle Engineering and Management of Constructed Facilities
CE 311 Architectural Engineering
CE 322 Introduction to Construction Engineering
CE 32201 Project Control and Life Cycle Execution of Constructed Facilities
CE 340 Hydraulics
CE 343 Elementary Hydraulics Laboratory (1 credit)
CE 350 Environmental Engineering

CE 352 Biological Principles of Environmental Engineering
CE 353 Physico-Chemical Principles of Environmental Engineering
CE 355 Engineering Environmental Sustainability
CE 361 Transportation Engineering
CE 371 Structural Analysis I
CE 413 Building Envelope Design and Thermal Loads
CE 414 Building Mechanical and Electrical System Design
CE 418 Hydraulics Engineering
CE 424 Human Resource Management in Construction
CE 426 Construction Cost Control Concepts
CE 440 Urban Hydraulics
CE 456 Water and Wastewater Treatment
CE 457 Air Pollution Control and Design
CE 461 Roadway and Pavement Design
CE 470 Structural Steel Design
CE 473 Reinforced Concrete Design
CE 479 Design of Building Components and Systems
CE 513 Lighting in Buildings
CE 51401 Building Controls
CE 51501 Building Energy Audits
CE 560 Public Mass Transportation
CE 563 Airport Design
CHE 205 Chemical Engineering Calculations
CHE 461 Biomedical Engineering (1 credit)
CHM 25500 Organic Chemistry
CHM 25501 Organic Chemistry Laboratory (1 credit)
CHM 25600 Organic Chemistry
CHM 25601 Organic Chemistry Laboratory (1 credit)
CHM 37300 Physical Chemistry
CHM 37301 Physical Chemistry Laboratory (1 credit)
CS 240 Programming in C
CS 250 Computer Architecture
CS 251 Data Structures and Algorithms
CS 307 Software Engineering I*
CS 352 Compilers: Principles and Practice
CS 354 Operating Systems
CS 381 Introduction to the Analysis of Algorithms
CS 471 Introduction to Artificial Intelligence
EAS 403 Physical Oceanography
EAS 421 Atmospheric Thermodynamics
EAS 422 Atmospheric Dynamics I
EAS 423 Atmospheric Dynamics II
ECE 202 Linear Circuit Analysis II (For those doing ECE minor)
ECE 255 Introduction to Electronics Analysis and Design
ECE 270 Introduction to Digital System Design

ECE 30010 Introduction to Machine Learning and Pattern Recognition
 ECE 301 Signals and Systems
 ECE 302 Probabilistic Methods in Electrical and Computer Engineering
 ECE 311 Electric and Magnetic Fields
 ECE 321 Electromechanical Motion Devices
 ECE 362 Microprocessor Systems and Interfacing
 ECE 423 Electromechanical Motion Control
 ECE 425 Electric Machines
 ECE 432 Elements of Power System Engineering
 ECE 433 Power Electronics
 ECE 445 Modern Filter Design
 ECE 483 Digital Control Systems - Analysis and Design
 ECON 451 Gaming Theory
 EEE 360 Environmental And Ecological Engineering Laboratory
 EEE 495 Urban Water Projects
 EEE 595 Environmental And Ecological Engineering Projects (1-3 credit hours)
 ENGL 421 Technical Writing
 ENTR 310 Marketing and Management for New Ventures
 EPCS 301 Jr. Participation in Engineering Projects in Community Service
 (EPICS) 1 credit/semester
 EPCS 302 Jr. Participation in Engineering Projects in Community Service
 (EPICS) 2 credits/semester
 EPCS 401 Sr. Participation in Engineering Projects in Community Service
 (EPICS) 1 credit/semester
 EPCS 402 Sr. Participation in Engineering Projects in Community Service
 (EPICS) 2 credits/semester
 IE 335 Operations Research Optimization
 IE 343 Engineering Economics
(IE 343 and CE 394 cannot both be taken for Technical Elective credit.)
 IE 370 Manufacturing Processes I
(IE 370 and ME 363 cannot both be taken for Technical Elective credit.)
 IE 470 Manufacturing Processes II
 IE 477 Work Methods and Measurement
 IE 478 Production Planning and Control
 IE 490 Imagine, Model, and Make
 IE 558 Safety Engineering
 IE 570 Manufacturing Process Engineering
 IE 577 Human Factors in Engineering
 MA 301 Introduction to Proof Through Real Analysis
 MA 341 Foundations Through Analysis
 MA 351 Elementary Linear Algebra
 MA 353 Linear Algebra II with Applications
 MA 362 Topics in Vector Calculus
 MA 366 Ordinary Differential Equations
 MA 373 Financial Mathematics

MA 375 Introduction to Discrete Mathematics
 MA 416 Probability
 MA 421 Linear Programming and Optimization Techniques
 MA 425 Elements of Complex Analysis
 MA 428 Introduction to Fourier Analysis
 MA 440 Real Analysis (Honors)
 MA 442 Multivariate Analysis I (Honors)
 MA 450 Algebra (Honors)
 MA 453 Elements of Algebra I
 MA 454 Galois Theory (Honors)
 MA 460 Geometry
 MA 462 Elementary Differential Geometry
 MA 470
 MA 474 Methods of Random Modeling
 MA 510 Vector Calculus
 MA 511 Linear Analysis
 MA 520 Boundary Value Problems of Differential Equations
 MA 523
 MA 527 Advanced Mathematics for Engineers and Physicists I
 ME 363 Principles and Practices of Manufacturing Processes
(ME 363 and IE 370 cannot both be taken for Technical Elective credit.)
 ME 413 Noise Control
 ME 418 Engineering of Environmental Systems & Equipment
 ME 430 Power Engineering
 ME 433 Principles of Turbomachinery
 ME 438 Gas Turbine Engines
 ME 440 Internal Combustion Engines
 ME 444 Computer Aided Design
 ME 455 Vehicle Design and Fabrication
 ME 473 Engineering Design Using Modern Materials
 ME 492 Technology and Values
 ME 497 China Maymester
 ME 500 Thermodynamics
 ME 501 Statistical Thermodynamics
 ME 503 Micro-and-Nano-Scale Energy Transfer Processes
 ME 504 Automotive Control
 ME 505 Heat and Mass Transfer
 ME 506 Two-Phase Flow and Heat Transfer
 ME 507 Laser Processing
 ME 508 Heat Transfer in Biomedical Systems
 ME 509 Intermediate Fluid Mechanics
 ME 510 Gas Dynamics
 ME 513 Engineering Acoustics
 ME 514 Fundamentals of Wind Energy
 ME 517 Micro/Nanoscale Physical Processes

ME 518 Analysis of Energy Utilization Systems
ME 522 Indoor Environmental Analysis and Design
ME 525 Combustion
ME 526 Spray Applications and Theory
ME 533 Turbomachinery II
ME 538 Air Breathing Propulsion
ME 540 Combustion in Internal Combustion Engines
ME 549 Practical Experimental Vibrations
ME 553 Product and Process Design
ME 554 Intellectual Property For Engineers (1 credit)
ME 556 Lubrication, Friction and Wear
ME 557 Design for Manufacturability
ME 559 Micromechanics of Materials
ME 560 Kinematics
ME 561 Optimal Design: Theory with Practice
ME 562 Advanced Dynamics
ME 563 Mechanical Vibrations
ME 564 Vibration of Discretized Systems
ME 565 Vehicle Dynamics
ME 567 Dynamical Problems in Design
ME 569 Mechanical Behavior of Materials
ME 570 Machine Design
ME 571 Reliability Based Design
ME 572 Analysis and Design of Robotic Manipulators
ME 573 Interactive Computer Graphics
ME 575 Theory and Design of Control Systems
ME 576 Computer Control of Manufacturing Processes
ME 577 Human Motion Kinetics
ME 578 Digital Control
ME 579 Digital Signal Processing
ME 580 Nonlinear Engineering Systems
ME 581 Numerical Methods in Mechanical Engineering
ME 585 Instrumentation for Engineering Measurement
ME 586 Microprocessors in Electromechanical Systems
ME 587 Engineering Optics
ME 588 Mechatronics
ME 592 Fundamentals of Particle Image Velocimetry (1 credit)
ME 597 Sustainable Design and Manufacturing
MFET 300 Applications of Automation in Manufacturing
MGMT 201 Management Accounting I (pre-req MGMT 200)
MGMT 304 Introduction to Financial Management
MGMT 305 Business Statistics (pre-req. STAT 225)
MGMT 306 Management Science (pre-req. MGMT 305 (may be taken concurrently) or
ECON 270 (may be taken concurrently))
MGMT 310 Financial Management

MGMT 323 Introduction to Market Analysis
MGMT 324 Marketing Management (pre-req MGMT 201 and ECON 252)
MGMT 350 Intermediate Accounting I (pre-req. MGMT 201)
MGMT 351 Intermediate Accounting II (pre-req. MGMT 350)
MGMT 361 Operations Management (pre-req STAT 225)
MGMT 382 Management Information Systems (pre-req CS 235)
MGMT 44301 Management of Human Resources
MGMT 455 Legal Background for Business I
MGMT 457 Legal Background for Business II (pre-req MGMT 455 or MGMT 354 or
BUS L2000 or BUS L2010 or BUS L2030)
MSE 235 Materials Properties Laboratory
MSE 250 Physical Properties in Engineering Systems
MSE 260 Thermodynamics of Materials
MSE 270 Atomistic Materials Science
MSE 330 Processing and Properties of Materials
MSE 335 Materials Characterization Laboratory
MSE 370 Electrical, Optical & Magnetic Properties of Materials
MSE 382 Mechanical Response of Materials
NS 212 Naval Weapon Systems
NS 350 Naval Ship Systems
NUCL 200 Introduction to Nuclear Engineering
NUCL 300 Nuclear Structure and Radiation Interactions
NUCL 310 Introduction to Neutron Transport
NUCL 320 Introduction to Materials for Nuclear Applications
NUCL 402 Engineering of Nuclear Power Systems
NUCL 460 Introduction to Controlled Thermonuclear Fusion
NUCL 470 Fuel Cell Engineering
NUCL 500 Nuclear Engineering
NUCL 501 Nuclear Engineering Principles
NUCL 504 Nuclear Engineering Experiments
NUCL 510 Nuclear Reactor Theory I
NUCL 560 Introduction to Fusion Technology
OBHR 300 Management of Human Resources
OBHR 330 Introduction to Organizational Behavior
PHYS 310 Intermediate Mechanics
PHYS 322 Intermediate Optics
PHYS 330 Intermediate Electricity and Magnetism
PHYS 342 Modern Physics
PHYS 344 Modern Physics
PHYS 360 Quantum Mechanics
PHYS 415 Heat and Thermodynamics
PHYS 417 Statistical Physics
PHYS 515 Thermodynamics
PHYS 560 Stellar Evolution
STAT 350 Introduction to Statistics

STAT 416 Probability
STAT 417 Statistical Theory
STAT 511 Statistical Methods
STAT 512 Applied Regression Analysis
STAT 513 Statistical Quality Control
STAT 514 Design of Experiments