Mechanical Engineering
College of Engineering

Students need ME Core GPA of 2.0 to graduate (ME Major + Other School/Department Reqs).

Mechanical Engineering Major Courses (43 credits)

(3) ME 20000 - Thermodynamics I
(3) ME 27000 - Basic Mechanics I
(3) ME 26300 - ME Design, Innov. & Entre.
(3) ME 27400 - Basic Mechanics II
(1) ME 29000 - ME Professional Seminar
(4) ME 30900 - Fluid Mechanics
(6) ME 30000/ME 45200/ME 47500 - 2 of 3 required - Satisfies Restricted Elective requirements

ME Professional Selectives (12 credits)

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

First-Year Engineering Course Requirements (29-31 credits)

(4) CHM 11500 - General Chemistry I (Science Outcome I)
(3) Oral Communication Elective* - COM 11400 Recommended (Oral Communication Outcome)
(4/3) Written Communication Elective* - ENGL 10600 Recommended - (Written Communication Outcome)
(2) ENGR 13100 - Transforming Ideas to Innovation I (Information Literacy Outcome)
(2) ENGR 13200 - Transforming Ideas to Innovation II
(4) MA 16500 - Analytic Geometry and Calculus I (Quantitative Reasoning Outcome)
(4) MA 16600 - Analytic Geometry and Calculus II
(4) PHYS 17200 - Modern Mechanics (Science Outcome II)
(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)

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

University Core Requirements

Human Cultures Humanities
Human Cultures Behavioral/Social Science
Information Literacy
Science Selective

WAC El.

ECON El.
ENGR 13100
CHM 11500
PHYS 17200

Science, Technology & Society Selective
Written Communication
Oral Communication
Quantitative Reasoning

ME 29000
Written Comm. El.
Oral Comm. El.
MA 16500

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

Degree Works is knowledge source for specific requirements and completion

******************************************************************************
### Recommended Plan-of-Study (POS):

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

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 2nd Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>CGT 16300</td>
<td></td>
<td>3</td>
<td>ECE 20100</td>
<td>ENGR 13100, PHYS 17200, MA 26100 co-req.</td>
</tr>
<tr>
<td>4</td>
<td>MA 26100</td>
<td>MA 16600</td>
<td>1</td>
<td>ECE 20700</td>
<td>ECE 20100 co-req.</td>
</tr>
<tr>
<td>3</td>
<td>ME 20000</td>
<td>CHM 11500, ENGR 13200 co-req., MA 28100 co-req.</td>
<td>4</td>
<td>MA 26200</td>
<td>MA 26100</td>
</tr>
<tr>
<td>3</td>
<td>ME 27000</td>
<td>ENGR 13200 co-req., MA 28100 co-req., PHYS 17200</td>
<td>3</td>
<td>ME 26300</td>
<td>CGT 16300 co-req., MA 26200 co-req., ME 20000, ME 27000, ME 29000 co-req.</td>
</tr>
<tr>
<td>1</td>
<td>ME 29000</td>
<td>Oral Com., Written Comm., ME Status</td>
<td>3</td>
<td>ME 27400</td>
<td>ME 27000, MA 26200 co-req.</td>
</tr>
<tr>
<td>3</td>
<td>PHYS 24100</td>
<td>MA 16600 co-req., PHYS 17200</td>
<td>3</td>
<td>Economics Elective (B/SS)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Credits</th>
<th>Fall 4th Year</th>
<th>Prerequisite</th>
<th>Credits</th>
<th>Spring 4th Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>ME 31500</td>
<td>MA 30300, ME 30900, ME 36500</td>
<td>3</td>
<td>ME 46300</td>
<td>ME 31500, ME 35200, ME 37500, MSE 23000</td>
</tr>
<tr>
<td>3</td>
<td>Restricted Elective I</td>
<td>Varies</td>
<td>3</td>
<td>Restricted Elective II</td>
<td>Varies</td>
</tr>
<tr>
<td>3</td>
<td>Technical Elective II</td>
<td>Varies</td>
<td>3</td>
<td>Technical Elective III</td>
<td>Varies</td>
</tr>
<tr>
<td>3</td>
<td>General Education El. III</td>
<td>Varies</td>
<td>3</td>
<td>Technical Elective IV</td>
<td>Varies</td>
</tr>
<tr>
<td>3</td>
<td>Free Elective</td>
<td>Varies</td>
<td>3</td>
<td>General Education Elective IV</td>
<td>Varies</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 (*).

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARAB 10100, 10200, 20100, 20200, 30100, 30200</td>
<td>Standard Arabic Levels I-VI</td>
</tr>
<tr>
<td>ARAB 28000</td>
<td>Arabic Culture</td>
</tr>
<tr>
<td>ASL 10100, 10200, 20100, 20200</td>
<td></td>
</tr>
<tr>
<td>CHNS 10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200</td>
<td>Chinese Levels I-VIII</td>
</tr>
<tr>
<td>CLCS 23010</td>
<td>Survey of Greek Literature in Translation</td>
</tr>
<tr>
<td>CLCS 23100</td>
<td>Survey of Latin Literature</td>
</tr>
<tr>
<td>CMPL 26600</td>
<td>Intro to World Lit Beg - 1600</td>
</tr>
<tr>
<td>CMPL 26700</td>
<td>World Lit from 1500 to Today</td>
</tr>
<tr>
<td>FR 10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200</td>
<td>French Levels I-VIII</td>
</tr>
<tr>
<td>FR 33000</td>
<td>French Cinema</td>
</tr>
<tr>
<td>GER 10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200</td>
<td>German Levels I-VIII</td>
</tr>
<tr>
<td>GER 23000</td>
<td>German Literature in Translation</td>
</tr>
<tr>
<td>GER 33000</td>
<td>German Cinema</td>
</tr>
<tr>
<td>GREK 10100, 10200, 20100, 20200</td>
<td>Ancient Greek Levels I-IV</td>
</tr>
<tr>
<td>HEBR 10100, 10200, 20100, 20200</td>
<td>Modern Hebrew Levels I-IV</td>
</tr>
<tr>
<td>HEBR 12100, 12200, 22100, 22200</td>
<td>Biblical Hebrew Levels I-IV</td>
</tr>
<tr>
<td>HEBR 28000</td>
<td>Modern Israel</td>
</tr>
<tr>
<td>HIST 10300</td>
<td>Intro to the Medieval World</td>
</tr>
<tr>
<td>HIST 10400</td>
<td>Intro to the Modern World</td>
</tr>
<tr>
<td>HIST 10500</td>
<td>Survey of Global World</td>
</tr>
<tr>
<td>HIST 21000</td>
<td>The Making of Modern Africa</td>
</tr>
<tr>
<td>HIST 24000</td>
<td>East Asia and Its Historical Tradition</td>
</tr>
<tr>
<td>HIST 24100</td>
<td>East Asia in the Modern World</td>
</tr>
<tr>
<td>HIST 24300</td>
<td>South Asian History and Civilizations</td>
</tr>
<tr>
<td>HIST 24500</td>
<td>Middle East History and Culture</td>
</tr>
<tr>
<td>HIST 24600</td>
<td>Modern Middle East and North Africa</td>
</tr>
<tr>
<td>HIST 27100</td>
<td>Latin American History to 1824</td>
</tr>
<tr>
<td>HIST 27200</td>
<td>Latin American History from 1824</td>
</tr>
<tr>
<td>HIST 34000</td>
<td>Modern China</td>
</tr>
<tr>
<td>HIST 35100</td>
<td>The Second World War</td>
</tr>
<tr>
<td>HIST 35900</td>
<td>Gender in East Asian History</td>
</tr>
<tr>
<td>ITAL 10100, 10200, 20100, 20200, 30100, 30200</td>
<td>Italian Levels I-VI</td>
</tr>
<tr>
<td>ITAL 28000</td>
<td>Italian Culture and Civilization</td>
</tr>
<tr>
<td>ITAL 28100</td>
<td>The Italian Renaissance</td>
</tr>
<tr>
<td>ITAL 33000</td>
<td>Italian Cinema</td>
</tr>
<tr>
<td>ITAL 33300</td>
<td>The Spirit of Italian Comedy</td>
</tr>
<tr>
<td>ITAL 38000</td>
<td>Italian Culture and Civilization</td>
</tr>
<tr>
<td>JPNS 10100, 10200, 20100, 20200, 30100, 30200, 40100, 40200</td>
<td>Japanese Levels I-VIII</td>
</tr>
</tbody>
</table>
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 electives 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.
   - /Economics Selective (3 crs.) - either ECON 25100 "Microeconomics" or ECON 252 "Macroeconomics" will satisfy the Economics Selective. The course chosen will also satisfy the Human Cultures: Behavior/Social Sciences (BSS) Foundational Outcome.
   - /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.
   - Depth - A minimum of 6 credit hours must be taken in at least one department. This insures depth in at least one department.
   - 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.
   - 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.
   - 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.
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 must 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
Arabic (ARAB): *10100, 10200, 20100, 20200, All 300-level or higher ARAB courses.


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


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


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.


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


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.


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


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 p3re-approved list, a written request (or email) may be submitted to the Undergraduate Office to have a course considered for technical elective 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 Physicochemical 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


*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 Aerothrmodynamics  
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 BuildingEnvelope 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