Mechanical Engineering

The goal of the baccalaureate degree program is to prepare students to embark upon a professional career in Mechanical Engineering or to begin a graduate study. Graduates will be known for their accomplishments in the early stage of their careers and they should:

- Develop mechanical engineering solutions individually and through interdisciplinary teams within a global and societal context.
- Professionally and ethically engage in technical or business activity through engineering ability, communication skills, and knowledge.
- Continue professional growth through post-graduate education, continuing education, or professional activity.
- Contribute to the Northwest Florida regional economic development.

Mechanical Engineering is one of the largest, broadest, and oldest of the engineering disciplines. It is the engineering discipline that applies the principles of engineering, materials science, thermal sciences, mechanics, mathematics and physics for the design, analysis, manufacturing, and maintenance of mechanical systems. Because of the extremely rapid growth and changes relating to the application of mechanical engineering principles, the curriculum is designed to concentrate on a solid core of foundation courses. Electives are included to permit a student to delve deeply into selected subject matter and to learn other pertinent subjects.

Mechanical Engineers are capable of working in a wide variety of industry sectors, including aerospace, manufacturing, energy, environment, transportation, materials, and structures.

Program Requirements:

Students are required to have a laptop or tablet PC. Students should check with the department for minimum hardware configurations. Please visit our website for more information about our program, including a list of department scholarships and answers to some frequently asked questions.

In addition to the University’s general requirements, students seeking the BSME must meet the requirements listed below.

A minimum course grade of “C” or better is required in certain Engineering courses as well as all math, science, and engineering courses that serve as prerequisites to EGN, EGM, EML, and EEL prefixed courses and labs. See program requirements below for a full set of courses that require a grade of “C” or better.

The mechanical engineering curriculum is designed to yield a set of outcomes. Each upper division course in the program contributes to at least one of these outcomes. A current list of our program outcomes and the courses that map to them can be found here.

All students must complete an exit interview and submit a final copy of their senior design report before graduating.

General Education

In addition to the General Education requirements listed on this page, students must satisfy all additional University requirements, including the Gordon Rule, multicultural, and foreign language requirements. With appropriate planning and coordination with an academic advisor, students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the “University Requirements” section of this catalog.

Mechanical Engineering

Contribute to the Northwest Florida regional economic development.

Social Sciences

Choose one course from Group A and one Additional course from either Group A or Group B

Group A

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMH 2010</td>
<td>United States since 1877</td>
</tr>
<tr>
<td>ANT 2000</td>
<td>Introduction to Anthropology</td>
</tr>
<tr>
<td>ECO 2013</td>
<td>Principles of Economics Macro</td>
</tr>
<tr>
<td>POS 2041</td>
<td>American Politics</td>
</tr>
<tr>
<td>PSY 2012</td>
<td>General Psychology</td>
</tr>
<tr>
<td>SYG 2000</td>
<td>Introduction to Sociology</td>
</tr>
</tbody>
</table>

Group B

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMH 2010</td>
<td>United States to 1877</td>
</tr>
<tr>
<td>ANT 2400</td>
<td>Current Cultural Issues</td>
</tr>
<tr>
<td>ANT 2100</td>
<td>Introduction to Archaeology</td>
</tr>
<tr>
<td>CCJ 2002</td>
<td>Survey of Crime and Justice</td>
</tr>
<tr>
<td>CPO 2002</td>
<td>Comparative Politics</td>
</tr>
<tr>
<td>DEP 2004</td>
<td>Human Development Across the Lifespan</td>
</tr>
<tr>
<td>EUH 1000</td>
<td>Western Perspectives I</td>
</tr>
<tr>
<td>EUH 1001</td>
<td>Western Perspectives II</td>
</tr>
<tr>
<td>FIN 2104</td>
<td>Personal Financial Planning</td>
</tr>
<tr>
<td>GEA 2000</td>
<td>Nations and Regions of the World</td>
</tr>
<tr>
<td>GEB 1011</td>
<td>Introduction to Business</td>
</tr>
<tr>
<td>IDH 1041</td>
<td>Honors Core 2</td>
</tr>
<tr>
<td>INR 2002</td>
<td>International Politics</td>
</tr>
<tr>
<td>MMC 2000</td>
<td>Principles of Mass Communication</td>
</tr>
<tr>
<td>PLA 2013</td>
<td>Survey of American Law</td>
</tr>
<tr>
<td>SOW 2192</td>
<td>Understanding Relationships in the 21st Century</td>
</tr>
<tr>
<td>SPM 2010</td>
<td>Sport in Global Society</td>
</tr>
<tr>
<td>SYG 2010</td>
<td>Current Social Problems</td>
</tr>
</tbody>
</table>
**Humanities**

Choose one course from Group A and one additional course from either Group A or Group B

### Group A

- **ARH 1000** Art Appreciation
- **LIT 2000** Introduction to Literature
- **MUL 2010** Music Appreciation
- **PHI 2010** Introduction to Philosophy
- **THE 2000** Theatre Appreciation

### Group B

- **AML 2010** American Literature I
- **AML 2020** American Literature II
- **AML 2072** Sex, Money, and Power in American Literature

**Reflected Courses:**

- **ART 1015C** Exploring Artistic Vision
- **ART 2821** Art and Visual Culture Today
- **CRW 2001** Introduction to Creative Writing
- **ENL 2010** History of English Literature I
- **ENL 2020** History of English Literature II
- **IDH 1040** Honors Core 1
- **LIT 2030** Introduction to Poetry
- **MUH 2930** The Music Experience: Special Topics
- **PHI 2103** Critical Thinking
- **PHI 2603** Ethics in Contemporary Society
- **REL 1300** World Religions
- **THE 2300** Survey of Dramatic Literature
- **SPC 2608** Basic Communication Skills

**Natural Sciences**

Choose one course from Group A and one additional course from either Group A or Group B

### Group A

- **AST 1002** Descriptive Astronomy
- **BSC 1005** General Biology for Non-Majors
- **BSC 1085** Anatomy and Physiology I
- **BSC 2010** Biology I
- **CHM 1020** Concepts in Chemistry
- **CHM 2045** General Chemistry I
- **ESC 2000** Introduction to Earth Science
- **EVR 2001** Introduction to Environmental Science
- **PHY 2048** Calculus-Based Physics I
- **PHY 2048C** University Physics I - Studio
- **PHY 2053** Algebra-Based Physics I

### Group B

- **ANT 2511** Biological Anthropology
- **BOT 2010** General Botany
- **BSC 1050** Fundamentals of Ecology
- **BSC 1086** Anatomy and Physiology II
- **BSC 2011** Biology II

**Reflected Courses:**

- **BSC 2311** Introduction to Oceanography and Marine Biology
- **CHM 1032** Fundamentals of General Chemistry
- **CHM 2046** General Chemistry II
- **CIS 2530** Introduction to Cybersecurity
- **EVR 2001** Introduction to Environmental Science
- **GEOL 1200** Physical Geography
- **GLY 2010** Physical Geology
- **MCB 1000** Fundamentals of Microbiology
- **PHC 2082** Informatics and Your Health
- **PHY 2049** Calculus-Based Physics II
- **PHY 2054** Algebra-Based Physics II

* May be taken with or without lab.

**Passed by UWF Faculty Senate on 11/08/2002**

This list is continually updated and students are encouraged to check with their advisors for alternative options.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AML 2010</strong></td>
<td>American Literature I</td>
<td>3</td>
</tr>
<tr>
<td><strong>AML 2020</strong></td>
<td>American Literature II</td>
<td>3</td>
</tr>
</tbody>
</table>

**General Education Electives**

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

In order to minimize the number of courses required, students should consult with their academic advisor for courses which will satisfy both the General Education requirements and common prerequisites.

For example, students can take **MAC 2311** Analytic Geometry and Calculus I or **MAC 2312** Analytic Geometry and Calculus II to complete the Mathematics requirement. The sciences listed in the Common Prerequisites section will also fulfill the General Education requirement. To maximize the overlap, one of the two General Education Electives should be taken in the Natural Sciences, specifically **CHM 2045** General Chemistry I, **PHY 2048** Calculus-Based Physics I, or **PHY 2049** Calculus-Based Physics II.

**Multicultural Requirement**

**Multicultural Courses**

An important component of a liberal education is the study of cultures other than one's own. As such, multiculturalism encompasses the appreciation of the values, expressions, and modes of organization of diverse cultural communities. To further such study, the University of West Florida requires all students pursuing a bachelor's degree to complete at least one course that explores one or more of the dimensions of another culture (language, religion, socio-economic structures, etc.). Students are exempt from this requirement if they have completed an A.A. degree, the general education program at a Florida public institution, or a baccalaureate degree.

The requirement is satisfied by the successful completion of a multicultural course designated on the following list. Several of the selections are General Education courses, and students may enroll in these to meet both the General Education and the multicultural requirements.

**Passed by UWF Faculty Senate on 11/08/2002**

This list is continually updated and students are encouraged to check with their advisors for alternative options.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AML 2010</strong></td>
<td>American Literature I</td>
<td>3</td>
</tr>
<tr>
<td><strong>AML 2020</strong></td>
<td>American Literature II</td>
<td>3</td>
</tr>
</tbody>
</table>
AML 3604 African American Literature 3
AML 3624 Black Women Writers 3
AML 4015 Topics in Nineteenth-Century American Literature 3
ANT 2000 Introduction to Anthropology 3
ANT 2301 Human Sexuality and Culture 3
ANT 3212 Peoples and Cultures of the World 3
ANT 3312 North American Indians 3
ANT 3363 Japanese Culture 3
ANT 3403 Cultural Ecology 3
ANT 4006 Anthropology of Human Rights 3
ARH 1000 Art Appreciation 3
ARH 2050 Western Survey I: Prehistory to the Medieval Period 3
ARH 2051 Western Survey II: Renaissance to Contemporary 3
ARH 3590 Non-Western Art 3
ARH 3606 Native American Art 3
ARH 4302 Late Renaissance Art in Italy 3
ARH 4305 Early Italian Renaissance Art 3
ARH 4412 The Age of Revolution to Romanticism in Europe: 1750-1850 3
ARH 4450 Modern Art: 1850-1980 3
ARH 4470 Contemporary Art 3
ARH 4563 Art of Japan 3
ARH 4892 Inscribed Bodies: Concepts of Tattoo and Body Art in World History 3
CCJ 3678 Race, Gender, Ethnicity, and Crime 3
COM 3014 Gender Communication 3
COM 3461 Intercultural Communication 3
CPO 2002 Comparative Politics 3
CPO 3103 Politics of Western Europe 3
CPO 4303 Politics of Spain, Portugal, and Latin America 3
CPO 4792 Geopolitics 3
CRW 2001 Introduction to Creative Writing 3
EDF 2085 Teaching Diverse Populations 3
ENG 4013 Introduction to Literary Theory 3
ENL 2020 History of English Literature II 3
EUH 1000 Western Perspectives I 3
EUH 1001 Western Perspectives II 3
EUH 3203 Modern Europe 3
EUH 3411 Rome and the Mediterranean World 3
EUH 3576 Soviet Union since 1917 3
FRE 4955 Supervised Foreign Language Field Experience Abroad 1-3
GEO 2000 Nations and Regions of the World 3
GEO 4405 Geography of Latin America 3
GEB 4361 International Business 3
GEO 3421 Cultural Geography 3
GEO 3471 Geography of World Affairs 3
HIS 4316 Women in the Atlantic World 3
IDH 1040 Honors Core 1 3
IDH 1041 Honors Core 2 3
INR 2002 International Politics 3
LAH 4728 Gender and Sexuality in Latin America from Colonization to Today 3
JPN 3270 Supervised Language Experience Abroad 3
LIT 2000 Introduction to Literature 3
LIT 2030 Introduction to Poetry 3
LIT 3233 Postcolonial Literature 3
LIT 4385 Feminist Theory 3
MAN 4102 Management of Diversity 3
MAR 4156 Seminar in International Marketing 3
MMC 3601 Minorities and the Mass Media 3
MMC 4300 Global Communication 3
MUH 2930 The Music Experience: Special Topics 3
MUL 2010 Music Appreciation 3
NUR 4615 Community and Public Health Nursing 3
NUR 4636 Public Health & Community-based Nursing 3
PHI 3790 African Philosophy 3
PSY 3680 Positive Psychology 3
REL 3142 New Perspectives on the Religious Self 3
REL 3310 Philosophies of the East 3
SOP 3730 Psychology, Culture, and Society 3
SOW 4233 Human Diversity and Social Justice 3
SOW 4941 Immersive Experiences in Social Work 3
SPN 3400 Advanced Stylistics 3
SPN 4500 Spanish Civilization 3
SPN 4520 Latin American Culture and Civilization 3
SYO 4530 Inequality in America 3

**Civic Literacy Requirement**

1. Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
   a. Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
      i. Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
      ii. An understanding of the United States Constitution and its application;
      iii. Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
      iv. An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.

2. Achieving the standard score on one of the following assessments:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Standard Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic Literacy Exam</td>
<td>60</td>
</tr>
<tr>
<td>Advanced Placement Government</td>
<td>3</td>
</tr>
<tr>
<td>and Politics: United States</td>
<td></td>
</tr>
</tbody>
</table>
Advanced Placement United States History 4
CLEP American Government 50

*BOG 8.006

Common Prerequisites

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual for course substitutions from Florida colleges and universities.

A minimum grade of a “C” is required in the following courses. Note that the labs are required for Physics and Chemistry, but a “C” is not required (although a passing grade is required).

CHM 2045+L  General Chemistry I (+Lab) 4
MAC 2311  Analytic Geometry and Calculus I 4
MAC 2313  Analytic Geometry and Calculus II 4
MAP 2302  Differential Equations 3
EGN 2911L  Calculus-Based Physics I (+Lab) 4
EGN 2912L  Calculus-Based Physics II (+Lab) 4

Total Hours 27

Note that students may begin taking engineering courses prior to completing all of these math and science prerequisites, but they must complete those math and science courses (with a minimum of a “C” grade) listed as prerequisites to any engineering classes they wish to take.

Major

EEL 3111+L  Circuits I (+Lab) \( ^{1, c} \) 4
EGM 2500  Engineering Mechanics-Statics \( ^{1, c} \) 3
EGE 4834  Programming for Engineers \( ^{1, c} \) 3
EGN 3365  Engineering Materials \( ^{1, c} \) 3
EGN 3401  Engineering Mechanics-Dynamics \( ^{1, c} \) 3
EGN 3344  Numerical Methods \( ^{1, c} \) 3
EGN 2911L  Sophomore Engineering Design I \( ^{1, c, 2} \) 3
EGN 2912L  Sophomore Engineering Design II \( ^{1, c, 2} \) 3
EGN 3913L  Junior Engineering Design I \( ^{1, c} \) 1
EGN 3914L  Junior Engineering Design II \( ^{1, c} \) 1
EML 3022  Computer Aided Design and Modeling \( ^{1, c} \) 3
EML 3015  Thermal Fluid Systems I \( ^{1, c} \) 3
EML 3016+L  Thermal Fluid Systems II (+Lab) \( ^{1, c} \) 4
EML 3500  Machine Design \( ^{1, c} \) 3
EML 3011+L  Mechanics of Materials (+Lab) \( ^{1, c} \) 4
EML 4804+L  Mechatronic Systems (+Lab) \( ^{1, c} \) 4
EML 4225  Dynamic Systems \( ^{1, c} \) 3
EGN 4950  Capstone Design I \( ^{2, 1, c} \) 3
EGN 4952E  Capstone Design II \( ^{2, 1, c} \) 3
EGS 4032  Professional Ethics \( ^1 \) 3
Mechanical Engineering Electives \( ^{1, c} \) 21

Total Hours 76

1Mechanical Engineering Elective restrictions: Any 3000 level or higher EML, EGM, EEL, EEE course, as well as other courses (which must be preapproved by your advisor). At least 2 courses must be in Thermal Systems or Mechanical Systems.

2Note that EGN 4950 Capstone Design I and EGN 4952L Capstone Design II is the senior design project. This final project is the culmination of the engineering education. As such, this sequence of courses must be taken in the last 2 semesters of a student’s program. Seniors must see their academic advisor in order to register for them.

3Students who begin their Mechanical program as sophomores or higher may replace this with a professional development elective.
Work with your academic advisor to choose an elective that will aid you in your career objectives. Typical courses for this elective include, but are not limited to, professional writing courses, courses from other STEM fields, and business courses.

4Students who begin their Mechanical program as juniors or higher may replace these credits with a professional development elective.

5These courses require a minimum grade of a C. Note: C- is not acceptable. Other courses may also require a C if they are prerequisites to electives that you choose.

*Courses included in the major GPA

Mechanical Engineering Minor

The Minor in Mechanical Engineering provides an opportunity for students majoring in other areas to take a limited number of mechanical engineering courses to complement their majors. The Minor in Mechanical Engineering is open to all UWF students with the exception of mechanical engineering majors. Students applying for the minor must have a declared major. Students may not take a course and its prerequisite during the same semester.

Students seeking the Minor in Mechanical Engineering must have a minimum course grade of “C” or better in EML 3022 Computer Aided Design and Modeling, EGM 2500 Engineering Mechanics-Statics, EGN 3365 Engineering Materials, and EML 3011 Mechanics of Materials.

The courses in the minor require MAC 2311 Analytic Geometry and Calculus I, CHM 2045 General Chemistry I, and PHY 2048 Calculus-Based Physics I as prerequisites with a minimum grade of “C”. Non-engineering majors may substitute PHY 2053 Algebra-Based Physics I for PHY 2048 Calculus-Based Physics I to fulfill the prerequisite for EGM 2500 Engineering Mechanics-Statics.

EML 3022  Computer Aided Design and Modeling 3
EGM 2500  Engineering Mechanics-Statics 3
EGN 3365  Engineering Materials 3
EML 3011  Mechanics of Materials 3
EML 3500  Machine Design 3

Total Hours 15