

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:

- Be successful in the professional practice of engineering or related fields and will advance in their chosen careers.
- Be successful in pursuing advanced degrees in engineering or related fields.

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.

The Bachelor of Science degree in Mechanical Engineering program at UWF is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>. ABET is the recognized accreditor for college and university programs in applied science, computing, engineering and technology and is among the most respected accreditation organizations in the United States.

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 on the [Institutional Effectiveness website](#).

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

General Education

ADDENDUM - 06/12/2025

In addition to the [General Education](#) requirements, students must satisfy all additional State of Florida requirements, including the [College-Level Communication and Computation](#), [Civic Literacy](#),

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 [State University Requirements](#) and [Degree Requirements](#) sections of this catalog.

General Education Curriculum:

Communication

ENC 1101	English Composition I (Core)	3
ENC 1102	English Composition II (Breadth)	3

Communication Elective Options:

CRW 2001	Introduction to Creative Writing
MMC 2000	Principles of Mass Communication
SPC 2608	Public Speaking

Humanities

Choose one course from the Humanities Core and one additional course from either the Humanities Core or the Humanities Breadth. 6

Humanities Core Options:

ARH 1000	Art Appreciation
HUM 2020	Introduction to Humanities
HUM 2020H	Honors Introduction to Humanities
LIT 2000	Introduction to Literature
MUL 2010	Music Appreciation
PHI 2010	Introduction to Philosophy
THE 2000	Theatre Appreciation

Humanities Breadth Options:

AML 2010	American Literature I
AML 2020	American Literature II
AMS 2010	Civil Discourse and the American Political Order
ARH 2050	Western Survey I: Prehistory to the Medieval Period
ARH 2051	Western Survey II: Renaissance to Contemporary
ART 1015C	Exploring Artistic Vision
ENL 2010	History of English Literature I
ENL 2020	History of English Literature II
LIT 2030	Introduction to Poetry
MUH 2004	The Music Experience - Concerts
PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions
THE 2300	Survey of Dramatic Literature

Mathematics

Choose one course from the Mathematics Core and one additional course from either the Mathematics Core or the Mathematics Breadth. 6

Mathematics Core Options:

MAC 1105	College Algebra
MAC 1105C	College Algebra with Lab
MAC 2311	Analytic Geometry and Calculus I

MGF 1130	Mathematical Thinking	
STA 2023	Elements of Statistics	
Mathematics Breadth Options:		
MAC 1114	Trigonometry	3
MAC 1140	Precalculus Algebra	
MAC 1147	Precalculus with Trigonometry	
MAC 2233	Calculus with Business Applications	
MAC 2312	Analytic Geometry and Calculus II	
MGF 1131	Mathematics in Context	
STA 2360	Introduction to Data Science	

Natural Sciences

Choose one course from the Natural Sciences Core and one additional course from either the Natural Sciences Core or the Natural Sciences Breadth. 6

Natural Sciences Core Options:		
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	
EVR 2011H	Honors Introduction to Environmental Science	
GLY 2010	Physical Geology	
PHY 1020	Conceptual Physics	
PHY 2048	Calculus-Based Physics I *, **	
PHY 2048C	Calculus-Based Physics I Studio ***	
PHY 2053	Algebra-Based Physics I *, **	
Natural Sciences Breadth Options:		
ANT 2511	Biological Anthropology *	
AST 2037	Life in the Universe	
BOT 2010	General Botany	
BSC 1050	Fundamentals of Ecology	
BSC 1086	Anatomy and Physiology II *	
BSC 2011	Biology II	
BSC 2311	Introduction to Oceanography and Marine Biology *	
CGS 2020	Introduction to Machine Learning	
CHM 2046	General Chemistry II *	
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.

** Algebra-Based Physics is usually recommended for non-science majors, while Calculus-Based Physics is recommended for science majors.

***Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

Social Sciences

Choose one course from the Social Sciences Core and one additional course from either the Social Sciences Core or the Social Sciences Breadth. 6

Social Sciences Core Options:		
AMH 2010	United States to 1877	
AMH 2020	United States Since 1877	
ANT 2000	Introduction to Anthropology	
ECO 2013	Principles of Economics Macro	
POS 2041	American Politics	
PSY 2012	General Psychology	
Social Sciences Breadth Options:		
ANT 2100	Introduction to Archaeology	
CCJ 2002	Survey of Crime and Justice	
CIS 2530	Introduction to Cybersecurity	
COM 2023	Death and Communication	
CPO 2002	Comparative Politics	
DEP 2004	Human Development Across the Lifespan	
EUH 1000	Western Perspectives I	
EUH 1001	Western Perspectives II	
FIN 2104	Personal Finance	
GEA 2000	Nations and Regions of the World	
GEB 1011	Introduction to Business	
HIS 2050	Explore History	
HSC 2100	Personal, Family and Community Health	
INR 2002	International Politics	
PLA 2013	Survey of American Law	
PLA 2013H	Honors Survey of American Law	
SPM 2010	Sport in Global Society	
SYG 2000	Introduction to Sociology	

General Education Electives

Choose an additional course from two of the five areas of Communication Electives, Mathematics, Social Sciences, Humanities, 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 Natural Science 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.

Civic Literacy Requirement

The 2017 Florida Legislature amended [Section 1007.25, Florida Statutes](#), to require students **initially entering a State University System (SUS) and/or Florida College System (FCS) institution in 2018-2019** and thereafter to demonstrate competency in civic literacy

by passing an assessment or taking AMH 2020 United States Since 1877 or POS 2041 American Politics.

The 2021 Legislature further amended Florida Statutes, requiring students to complete both a civic literacy course and an exam. In 2024, the Board of Governors made an additional revision, recognizing two new courses meeting the Civic Literacy requirement, AMH 2010 United States to 1877 and AMS 2010 Civil Discourse and the American Political Order. As a result, there are four cohorts of students currently matriculating at Florida public institutions that are subject to varying requirements.

As demonstrated in the table below, the exact civic literacy requirements are based on the academic term in which a student first enrolled in a Florida public institution.

Students Included in Cohort	Civic Literacy Competency Requirement
Cohort 1: Students initially entering the SUS or FCS before fall 2018	None
Cohort 2: Students initially entering the SUS or FCS in Academic Year 2018 through Academic Year 2020	Complete a course or Assessment.
Cohort 3: Students initially entering the SUS or FCS in Academic Year 2021 through Academic Year 2023	Course and Assessment.
Cohort 4: Students initially entering the SUS or FCS in fall 2024 and thereafter	Course and Assessment.

Additionally, for Cohorts 3 and 4, approved accelerated mechanisms may meet the course and/or assessment requirement, and students who pass the Florida Civic Literacy Exam (FCLE) in high school are exempt from the postsecondary exam requirement.

There are multiple ways to satisfy this requirement. Students should work with their academic advisor to determine which option is best for their degree requirements/degree plan.

Additional information can be found on our [Civic Literacy](#) website, SUS regulation [BOG 8.006](#), and Florida Statute [s.1007.25\(4.a-b\)](#).

Mathematics Pathway

Students are advised to complete the following courses to fulfill the mathematics pathway that aligns with the mathematics skills needed for success in their program and their career goals. Students should refer to their academic advisor for questions about the math pathway for their program. For information about this requirement, refer to the catalog page for [Mathematics Pathways](#). These courses may also fulfill requirements for General Education and Common Prerequisites.

Algebra through Calculus

Students will be placed on a starting point based on their mathematics placement.

MAC 1105	College Algebra	3-4
	or MAC 1105College Algebra with Lab	
	or MAC 1140 Precalculus Algebra	
	or MAC 1114 Trigonometry	
	or MAC 1147 Precalculus with Trigonometry	

	or MAC 2311 Analytic Geometry and Calculus I	
MAC 1140	Precalculus Algebra	3-4
	or MAC 1114 Trigonometry	
	or MAC 1147 Precalculus with Trigonometry	
	or MAC 2311 Analytic Geometry and Calculus I	
	or MAC 2312 Analytic Geometry and Calculus II	

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 & 2045L	General Chemistry I and General Chemistry I Laboratory	4
MAC 2311	Analytic Geometry and Calculus I	4
MAC 2312	Analytic Geometry and Calculus II	4
MAC 2313	Analytic Geometry and Calculus III	4
MAP 2302	Differential Equations	3
PHY 2048 & 2048L	Calculus-Based Physics I and Calculus-Based Physics I Lab	4
PHY 2049 & 2049L	Calculus-Based Physics II and 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 & 3111L	Circuits I and Electrical Circuits Laboratory ^{+, c}	4
EGM 2500	Engineering Mechanics-Statics ^{+, c}	3
EEL 4834	Programming for Engineers ^{+, c}	3
EGN 3365	Engineering Materials ^{+, c}	3
EGM 3401	Engineering Mechanics-Dynamics ^{+, c}	3
EGM 3344	Numerical Methods ^{+, c}	3
EGN 2911L	Sophomore Engineering Design I ^{+, c, 4}	1
EGN 2912L	Sophomore Engineering Design II ^{+, c, 4}	1
EGN 3913L	Junior Engineering Design I ^{+, c}	2
EGN 3914L	Junior Engineering Design II ^{+, c}	2
EML 3022	Computer Aided Design and Modeling ^{+, c}	3
EML 3015	Thermal Fluid Systems I ^{+, c}	3
EML 3016 & 3016L	Thermal Fluid Systems II and Thermal Fluid Systems II lab ⁺	4
EML 3703	Thermal Systems 3	3
EML 3500	Machine Design ⁺	3
EML 3011 & EML 3172L	Mechanics of Materials and Mechanics of Materials lab ^{+, c}	4
EML 4804 & 4804L	Mechatronic Systems and Mechatronic Systems lab ⁺	4
EML 4225	Dynamic Systems ⁺	3

EGN 4950	Capstone Design I ^{2, +, c}	1
EGN 4952L	Capstone Design II ^{2, +, c}	2
EGS 4032	Professional Ethics ⁺	3
Mechanical Engineering Electives ^{1, +}		18
Total Hours		76

¹ Mechanical 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 either Thermal or Mechanical systems.

² Note 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 should be taken in the last 2 semesters of a student's program. Seniors must see their academic advisor in order to register for them.

Major-Related

EGS 3441	Engineering Statistics	3
EGS 1006	Introduction to Engineering ^{3, +, c}	1
Total Hours		4

³ Students 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.

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

^c These courses require a minimum grade of a "C-." 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

Engineering Professional Certificate

This certificate program is focused on engineering professional knowledge. The Engineering Professional Certificate prepares students to achieve licensure and other valued industry certifications. The certificate will help students learn engineering fundamentals as well as specific industry skills. All prerequisites must be met in order to enroll in these courses.

Admission Requirements

Students seeking admission to the Engineering Professional Certificate Program must meet the requirements at the time of application. The program selection criteria are based on the following:

- Completion of prerequisite courses.
- In lieu of prerequisite course completion:
 - ABET accredited bachelor's degree in engineering OR related field.
 - At least one year of professional experience as an Engineering Professional.

EML 4961	Fundamentals of Engineering - Mechanical Exam Prep	3
or EGN 4965	Fundamentals of Engineering Exam Preparation for Electrical and Computer Engineering Major	
Choose two of the following:		6
EML 3960	Certified Solidworks Professional Exam Prep	
CEN 4054	Six Sigma Green Belt	
EGN 3990	AutoCAD Certificate Prep	
Total Hours		9