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Civil Engineering

The goal of the baccalaureate degree program is to prepare students to embark upon a professional career in Civil 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.

Civil Engineering is the study of planning, designing, and supervising construction of infrastructure including buildings, bridges, highways, levees, dams, drinking water and wastewater treatment facilities, ports, railroads, and airports. The program covers environmental engineering and soil mechanics, structural analysis and design, surveying and mapping, transportation, and water resources and hydraulics.

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 BSCE 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 CEG, CES, CGN, CWR, ENV, TTE, and SUR prefixed courses and labs. See program requirements for a full set of courses that require a grade of "C-" or better.

The civil 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 <u>Institutional</u> <u>Effectiveness website</u>.

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, students must satisfy all additional University requirements, including the <u>College-Level Communication and Computation</u>, <u>Multicultural</u>, and <u>Foreign Language</u> 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 <u>State University Requirements</u> and <u>Degree Requirements</u> 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

| | Indinaria | | | |
|--------------|--|--|---|--|
| C ao H | hoose one cour dditional course umanities Brea | rse from the Humanities Core and one from either the Humanities Core or the dth. | 6 | |
| Н | umanities 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 | | |
| Н | umanities Brea | dth 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 | | |
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Mathematics

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

| Mathematics Bre | eadth. | |
|-----------------|-------------------------------------|---|
| Mathematics Cor | re 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 Bre | eadth 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

Natural Sciences Core Options:

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

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| | 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 2001H | 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 *, ** |
| Na | atural 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.

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.

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.

| AML 2010 | American Literature I | 3 |
|----------|---|---|
| AML 2020 | American Literature II | 3 |
| AML 3604 | African American Literature | 3 |
| AML 3624 | Black Women Writers | 3 |
| AML 4015 | Topics in Nineteenth-Century American Literature | 3 |
| AML 4640 | Topics in Native American Literature | 3 |
| ANT 1001 | Anthropology as a Profession | 1 |
| ANT 2000 | Introduction to Anthropology | 3 |

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| IDH 1041 | Honors Core: Social Sciences | 3 |
|-----------|---|---|
| INR 2002 | International Politics | 3 |
| ITA 1120C | Italian 1 | 4 |
| ITA 1121C | Italian 2 | 4 |
| JPN 1120C | Japanese I | 4 |
| JPN 1121C | Japanese II | 4 |
| LAH 4135 | Spanish Conquest of the Americas | 3 |
| LAH 4131 | Atlantic Indians: How Indigenous and African Peoples Shaped Europe & the Americas | 3 |
| LAH 4451 | Greater Mexico: Central America from Conquest to the 20th Century | 3 |
| LAH 4728 | Gender and Sexuality in Latin America from Colonization to Today | 3 |
| LIT 2000 | Introduction to Literature | 3 |
| LIT 2030 | Introduction to Poetry | 3 |
| LIT 4036 | Topics in Poetry and Poetics | 3 |
| LIT 4385 | Feminist Theory | 3 |
| MAR 4156 | Seminar in International Marketing | 3 |
| MMC 3743 | Communicating Fear: Horror Films and Popular Culture | 3 |
| MMC 3745 | Communicating Fear Abroad: International Horror Films & Popular Culture | 3 |
| MMC 4601 | Minorities and the Mass Media | 3 |
| MUH 2004 | The Music Experience - Concerts | 3 |
| MUL 2010 | Music Appreciation | 3 |
| NUR 4615 | Person Centered Population Health | 3 |
| NUR 4636 | Epidemiology and Population Health Strategies | 3 |
| PHI 3790 | African Philosophy | 3 |
| PLA 2013H | Honors Survey of American Law | 3 |
| PUR 3404 | International Public Relations | 3 |
| PSY 3860 | Positive Psychology | 3 |
| SOP 3730 | Psychology, Culture, and Society | 3 |
| SOW 4233 | Human Diversity and Social Justice | 3 |
| SPN 1120C | Spanish I | 4 |
| SPN 1121C | Spanish II | 4 |
| SPN 3400 | Advanced Stylistics | 3 |
| SPN 4520 | Latin American Culture and Civilization | 3 |
| SYO 4250 | Sociology of Education | 3 |
| SYO 4421 | Sociology of Health, Illness and Health Care | 3 |
| SYO 4530 | Inequality in America | 3 |

Civic Literacy Requirement

The 2017 Florida Legislature amended <u>Section 1007.25</u>, Florida <u>Statutes</u>, 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 <u>Civic Literacy</u> website, SUS regulation <u>BOG 8.006</u>, and Florida Statute <u>s.1007.25(4,a-b)</u>.

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 <u>Mathematics Pathways</u>. These courses may also fulfill requirements for General Education and Common Prerequisites.

| Algebra through | Calculus | |
|--------------------|---|-----|
| Students will be p | placed on a starting point based on their | |
| mathematics place | cement. | |
| MAC 1105 | College Algebra | 3-4 |
| or MAC 11050 | College 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 <u>Common Prerequisite Manual</u> for course substitutions from Florida colleges and universities.

A minimum grade of a "C-" is required in the following courses.

| Total Hours | | 27 |
|---------------------|---|----|
| PHY 2049 & 2049L | Calculus-Based Physics II and Calculus-Based Physics II Lab ^{*, C-} | 4 |
| PHY 2048 & 2048L | calculus-Based Physics I and Calculus-Based Physics I Lab ^{*, C-} | 4 |
| MAP 2302 | Differential Equations C- | 3 |
| MAC 2313 | Analytic Geometry and Calculus III ^{C-} | 4 |
| MAC 2312 | Analytic Geometry and Calculus II ^{*, C-} | 4 |
| MAC 2311 | Analytic Geometry and Calculus I ^{*, C-} | 4 |
| CHM 2045 & 2045L | General Chemistry I and General Chemistry I Laboratory ^{*, C-} | 4 |

* Note these common prerequisites can also be used to fulfill General Education requirements.

C-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

| SUR 2102 & 2102L | Introduction to Geomatics and Introduction to Geomatics Lab | 4 |
|---------------------|--|----|
| CEG 3011 & 3011L | Geotechnical Engineering and Geotechnical Engineering Lab ^{+, C-} | 4 |
| CEG 4801 | Geotechnical Engineering Design +, C- | 3 |
| CES 3100 | Structural Analysis ^{+, C-} | 3 |
| CES 4702 | Reinforced Concrete Design | 3 |
| CGN 2328 | Computer Graphics for Engineering +, C- | 3 |
| CGN 3501 & 3501L | Civil Engineering Materials and Civil Engineering Materials Lab ^{+, C-} | 4 |
| CGN 4930 | FE Exam Review Seminar ^{3, +} | 1 |
| CWR 3201 & 3201L | Water Resource Engineering and Water Resource Engineering Lab ^{+, C-} | 4 |
| CWR 4202 | Hydraulic Engineering Design + | 3 |
| EGM 2500 | Engineering Mechanics-Statics +, C- | 3 |
| EML 3011 | Mechanics of Materials +, C- | 3 |
| ENV 3001 & 3001L | Environmental Engineering and Environmental Engineering Lab ^{+, C-} | 4 |
| ENV 4514 | Environmental Engineering Design | 3 |
| EML 3016 | Thermal Fluid Systems II | 3 |
| TTE 3004 | Transportation Engineering +, C- | 3 |
| TTE 4804 | Highway Engineering Design | 3 |
| CGN 4803L | Civil Engineering Capstone I ^{2, +, C-} | 1 |
| CGN 4804L | Civil Engineering Capstone II ^{2,+, C-} | 2 |
| Civil Engineering | Electives ¹ | 9 |
| Total Hours | | 66 |

- ¹ Civil Engineering Elective restrictions: Any 3000 level or higher courses not already required in the major. At least two of the Electives (6 hours) must be taken from prefixes of CEG, CES, CGN, CWR, ENV, SUR, TTE, and one (3 hours) can be taken from any related prefix.
- ² Note that CGN 4803L Civil Engineering Capstone I Civil Engineering Capstone I and CGN 4804L Civil Engineering Capstone II Civil Engineering Capstone II combine as 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.
- ³ This course is a designed to help students review for the FE exam, which is a culmination of the curriculum of the civil engineering program. As such, it needs to be taken as close to the student's final semester as possible.

Major-Related

| Total Hours | | 13 |
|-------------------------------|---|----|
| Science Elective ⁵ | | 3 |
| ETI 3445 | Construction Estimating | 3 |
| EIN 4354 | Engineering Economy | 3 |
| EGS 3441 | Engineering Statistics ⁺ | 3 |
| EGS 1006 | Introduction to Engineering ^{4, +} | 1 |

- ⁴ Students who begin their Civil 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.
- ⁵ This science elective should come from Biology, Geology, Ecology, Oceanography, or Environmental Science. Other course areas may also be taken with advisor/department approval.
- 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.