CIVIL AND ENVIRONMENTAL ENGINEERING

Undergraduate Degree Offered:
Bachelor of Science in Civil Engineering (B.S.C.E.)
Graduate Degrees Offered:
Master of Science in Civil Engineering (M.S.C.E.)
Master or Science in Engineering (M.S.E.)
Master of Science in Environmental Engineering (M.S.E.V.)
Master of Civil Engineering (M.C.E.)
Master of Engineering (M.E.)
Master of Environmental Engineering (M.E.V.E.)
Doctor of Philosophy in Civil Engineering (Ph.D.)
Doctor of Philosophy in Engineering Science (Ph.D.)

This department offers course work and study pertinent to Civil Engineering, Engineering Mechanics, Material Science, and Environmental Engineering. Areas of concentration are structural engineering, engineering mechanics, geotechnical engineering, transportation engineering, water resources engineering, materials and corrosion engineering, and environmental engineering.

Students completing the program may enter the profession as engineers in civil, structural, geotechnical, transportation, water resources, environmental, hydraulics, or materials disciplines. All of these disciplines share the need for knowledge in the areas of engineering mechanics, civil engineering, material science, and environmental engineering. Through choice of the proper area of concentration, a student has the opportunity to channel academic studies specifically towards his/her career choice.

Graduates of the program may commence their engineering careers in either industry, engineering consulting firms, or public service at the federal, state, or local level. Initial assignments may include planning, design and implementation of water resources systems; planning and design of transportation and housing systems; regional planning, design, and management for abatement of air, water and solid waste pollution problems; design of bridges and single and multistory structures; and supervision of construction projects.

Mission Statement
The mission of the Department of Civil and Environmental Engineering is
1. to provide a quality educational experience for all students, both undergraduate and graduate, at the level of the top ranked universities in the nation;
2. to develop new knowledge, processes, or procedures through research which will benefit mankind; and
3. to provide service through professional activities.

Undergraduate Program, Vision and Guiding Principles
The Department will provide our undergraduate students with a strong, broad-based, engineering education that gives them the basic intellectual and organization skills that allow them to work with complex systems with technological, social, and environmental components. As many of our students begin work upon graduation in industry or with governmental organizations, the curriculum is designed to prepare our students for these roles by requiring a number of courses in the various fields of civil engineering and by providing limited specialization in one given area. The curriculum is designed to encourage lifelong learning and to prepare students for undertaking advanced studies in engineering or in other professional areas.

Undergraduate Educational Objectives
1. The Department will provide undergraduate students with the strong technical education needed for a career in civil engineering.
2. The Department will provide undergraduate students with an education that prepares them to perform effectively in the workplace with the communication skills needed to deal with coworkers, clients, and the public.
3. The Department will provide undergraduate students with an education that allows them to understand the societal implications of engineering decisions and designs in both a local and global context and the ethical training to evaluate those implications.
4. The Department will provide undergraduate students with an education that promotes the full and continuing development of their potential as engineers and effective members of society.

Concentrations
In addition to designated common coursework in engineering mechanics, civil, and environmental engineering, students undertake a concentration of 15 hours of coursework plus a 3-hour capstone design course.

Departmental Policies
In addition to the College’s graduation requirements, the Department has the following policies:
1. Advising is mandatory prior to each term.
2. Exit Interviews are a graduation requirement for all students.
3. Only 2 “D” grades in engineering courses may be used to fulfill graduation requirements.
4. Students are strongly advised to take the Fundamental Exam (F.E.)

Four-Year Curriculum - Civil Engineering

Prerequisites (State Mandated Common Prerequisites) for Students Transferring from a Florida Community College:
If a student wishes to transfer without an A.A. degree and has fewer than 60 semester hours of acceptable credit, the student must meet the university’s entering freshman requirements including ACT or SAT test scores, GPA, and course requirements.

Students should complete the prerequisite courses listed below at the lower level prior to entering the University. If these courses are not taken at the community college, they must be completed before the degree is granted. Unless stated otherwise, a grade of “C” is the minimum acceptable grade.

Students qualify for direct entry to their intended department if they have completed the following courses at a Community College or University in the Florida State University System (SUS) and meet all of the other admissions requirements of the University and College.

Some courses required for the major may also meet General Education Requirements thereby transferring maximum hours to the university. The following are transferable courses from the Community College that will be accepted in the Math/Science/Engineering areas:

Communications:
ENC 1101/1102 English I and II (6)

Humanities & Social Sciences:
Humanities Courses (6)
Social Science Courses (6)
Humanities or Social Sciences (3)

Mathematics:
USF C/C
MAC 2281 MAC 2311* (4)
MAC 2282 MAC 2312* (4)
MAC 2283 MAC 2313* (4)
MAP 2302 MAP 2302 (3)
*or MAC 2281, MAC 2282, MAC 2283

Natural Sciences:
USF C/C
CHM 2045 CHM 1045* (3)
CHM 2045L CHM 1045L* (1)
PHY 2048 PHY 2048 (3)
PHY 2048L PHY 2048L (1)
PHY 2049 PHY 2049 (3)
PHY 2049L PHY 2049L (1)
*or CHS 1440 Chemistry for Engineers

Please be aware of the immunization, foreign language, and continuous enrollment policies of the university, as well as the qualitative standards required.

Civil and Environmental Engineering Admissions Requirements

Students entering the Civil & Environmental Engineering department must have completed the equivalent USF Engineering Calculus sequence, one year equivalent USF General Physics and one semester equivalent USF General Chemistry with a minimum of 2.3 GPA, and must have an overall and USF GPA of 2.0 or better.

Continuation Requirements

Continuation in the Civil & Environmental Engineering program requires a minimum grade of "C" as well as a 2.5 GPA (based on best attempt) over the following courses:

- EGN 3311 - Statics
- EGN 3331 - Mechanics of Materials
- EGN 3353 - Basic Fluid Mechanics
- EGN 3365 - Materials Engineering I

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

The schedule that follows indicates how a diligent student who can devote full time to coursework can satisfy requirements in four academic years. Students without a solid foundation or those who cannot devote full time to academics should plan a slower pace. The following sequence is intended to facilitate registration planning and is subject to change based upon course availability. The sequence may also vary based upon individual considerations. Registration assistance will be provided by academic advisors.

Semester I
- ENC 1101 Composition I 3
- MAC 2281 Engineering Calculus I 4
- CHM 2045 General Chemistry I 3
- CHM 2045L General Chemistry I Lab 1
- EGN 3000 Foundations of Engineering 1
- Social Science Elective 3
- Total 15

Semester II
- ENC 1102 Composition II 3
- MAC 2282 Engineering Calculus II 4
- CHM 2046 General Chemistry II 3
- PHY 2048 General Physics I 3
- PHY 2048L General Physics I Lab 1
- EGS 1113 Introduction to Design Graphics 3
- Total 17

Summer Semester
- ALAMEA Perspective Elective 3
- Historical Perspective Elective 3
- EGN 3615 Engineering Economics with Social & Global Implications 3
- Total 9

Semester III
- PHY 2049 General Physics II 3
- PHY 2048L General Physics II Lab 1
- MAC 2283 Engineering Calculus III 4
- EGN 3311 Statics 3
- Historical Perspective Elective 3
- ENC 3246 Communication for Engineers (6A L&W) 3
- Total 17

Semester IV
- MAP 2302 Differential Equations 3

EGN 3321 Dynamics 3
EGN 3343 Thermodynamics 3
EGN 3443 Engineering Statistics 3
EGN 3365 Materials I 3
Total 15

Semester V
EGN 3353 Fluid Mechanics 3
EGN 3331 Mechanics of Materials 3
EGN 3331L Mechanics of Materials Lab 1
ENV 4001 Environmental Engineering I 3
TTE 4004 Transportation Engineering I 3
EGN 4420 Numerical and Computer Tools 3
Total 16

Semester VI
CES 3102 Structures I 3
CWR 4202 Hydraulics 3
CGN 3021 CE Lab 2
EGN 3373 Introduction to Electrical Systems I 3
GLY 3850 Geology for Engineers 3
Total 14

Semester VII
CEG 4011 Geotechnical Engineering I 3
CEG 4011L Geotechnical Engineering Lab 1
CE Concentration Elective 3
CE Concentration Elective 3
Fine Arts Elective 3
Total 13

Semester VIII
CE Concentration Elective 3
CE Concentration Elective 3
CE Concentration Elective 3
CE Capstone Design Requirement (MW/MI) 3
Social Science Elective 3
Total 15

Gordon Rule (6A) is fully met through the mathematics courses above, ENC1101, ENC1102, ENC 3246 and by selecting one technical or general education elective that is an approved 6A communication course or by completing an AA degree at a Florida Community College.

Exit Requirements in Major Works/Major Issues (MW/MI) and Literature and Writing (L&W) are fully met through ENC3246 and a Capstone Design Course indicated as MW/MI.

Civil Engineering Concentration AND CAPSTONE DESIGN Requirements

The following is a list of possible concentration electives that students may take. It is important that students adhere to prerequisites and co-requisites in choosing their electives.

CCE 4034 Construction Management
CEG 4012 Geotechnical Engineering II
CES 4605 Concepts of Steel Design
CGN 4702 Concepts of Concrete Design
CGN 4851 Concrete Construction Materials
CGN 4933 Special Topics in Civil and Environmental Engineering
CWR 4103 Water Resources I
CWR 4541 Water Resources II
ENV 4417 Water Quality & Treatment
TTE 4005 Transportation Engineering II

Sample tracks for Specialization Areas

Water Resources/Environmental Engineering
CWR 4103 Water Resources I 3
CWR 4541 Water Resources II 3
ENV 4417 Water Quality and Treatment 3
CEG 4012 Geotechnical Engineering II 3
### Structures/Materials

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<td>CES 4702</td>
<td>Concepts of Concrete Design</td>
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<td>CGN 4851</td>
<td>Concrete Construction Material</td>
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<td>CCE 4034</td>
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<td>CES 4740</td>
<td>Capstone Structural/Geotechnical/Materials Design</td>
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### Transportation/Geotechnics

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<td>CEG 5115</td>
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<td>CEG 4850</td>
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<tr>
<td>CCE 4034</td>
<td>Construction Management</td>
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*Please see academic advisor for required special topics courses.

Students may, with the help of an advisor, formulate their own track to meet the requirements for a bachelor’s degree in civil engineering. This track will consist of five electives coupled with a capstone design course (18 credit hours).