



Academic Learning Compact

Civil Engineering

Program Mission Statement

The mission of the School of Engineering is to provide diverse learning opportunities in the technical and professional aspects of engineering that prepare all participants to thrive in an evolving world.

The civil engineering program education objectives are to produce graduates with:
sound engineering fundamentals,
strong team and leadership skills,
strong problem solving skill,
an ability to learn and advance, and
effective communication skills.

Student Learning Outcomes

Graduates will be able

Content/Discipline-Specific Knowledge/Skills

- an ability to apply knowledge of mathematics, science, and engineering
- an understanding of professional and ethical responsibility
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in life-long learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- apply knowledge of mathematics through differential equations, calculus-based physics, chemistry, and at least one additional area of basic science, consistent with the program educational objectives
- apply knowledge of four technical areas appropriate to civil engineering
- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
- proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry
- an ability to apply probability and statistics to address uncertainty
- proficiency in a minimum of four (4) recognized major civil engineering areas (we focus on structural engineering, geotechnical engineering, water resources/environmental engineering, materials, transportation, and coastal

- an ability to conduct laboratory experiments and to analyze and interpret the resulting data in at least two the recognized major civil engineering areas (the lab areas at UNF are materials, geotechnical, hydraulics and surveying)
- an ability to design a system, component, or process in at least two civil engineering contexts
- an ability to include the principles of sustainability in to civil engineering design
- an understanding of professional practice issues such as: basic concepts in project management, business, public policy, and leadership; analyze issues in professional ethics; and explain the importance of professional licensure

Communication Skills

- an ability to function on multidisciplinary teams
- an ability to communicate effectively
- explain basic concepts in management, business, public policy, and leadership
- explain the importance of professional licensure
- an ability to communicate effectively with a range of audiences

Critical Thinking Skills

- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- an ability to identify, formulate, and solve engineering problems
- conduct civil engineering experiments and analyze and interpret the resulting data
- design a system, component, or process in more than one civil engineering context

Assessment Approaches

The civil engineering program utilizes a number of direct and indirect assessment measures, in agreement with our accreditation agency ABET, to assess proficiency of course outcomes and student outcomes. Direct assessment tools include course design projects, senior capstone design projects, and Fundamentals of Engineering (FE) examination results. Indirect assessment tools include graduating senior surveys, alumni surveys, and employer surveys.