CIVIL ENGINEERING (CAPITAL)

Learning Outcomes

1. **KNOW:** Graduates will be able to demonstrate broad mastery of core principles in resilient and sustainable civil infrastructure engineering as well as in-depth mastery in one concentration area (structural, transportation, environmental/water resources).

2. **THINK:** Graduates will be able to critically and creatively conceptualize, evaluate and formulate civil infrastructure engineering problems, as well as perform the analyses required for problem definition. All MSCE courses are taught with a significant design component that builds on the theory that students learn throughout their education. The graduate courses provide the class time for in-depth study of a specific area of civil engineering that does not occur in the undergraduate degree where the topic may be part of a larger course.

3. **APPLY/CREATE:** Graduates will be able to apply advanced knowledge, techniques, skills, and state of the practice tools to solve civil infrastructure engineering problems. In class, MSCE students are exposed to relevant challenges in the class topic area, such as structural failures, life span/life cycle analysis, flooding, and water pollution, and then, they apply the theory learned in class to solve these problems and to prevent further disasters, especially in a changing climate and where there is pressure to develop in areas that were previously considered unsuitable for urban development.

4. **COMMUNICATE:** Graduates will be able to effectively communicate, both orally and in writing, project outcomes, such as ideas, requirements, designs, analyses, findings, and justification for decisions. MSCE students demonstrate their communication skills by illustrating problem solutions, writing project reports, and presenting observations, conclusions, and recommendations for class and program requirements.

5. **PROFESSIONAL PRACTICE:** Graduates will be able to demonstrate an understanding of professional and ethical responsibility and conduct themselves accordingly. MSCE students participate in SARI training and in-class ethics and professional licensing discussions. Students demonstrate their professionalism while interacting with instructors, project sponsors, and classmates.