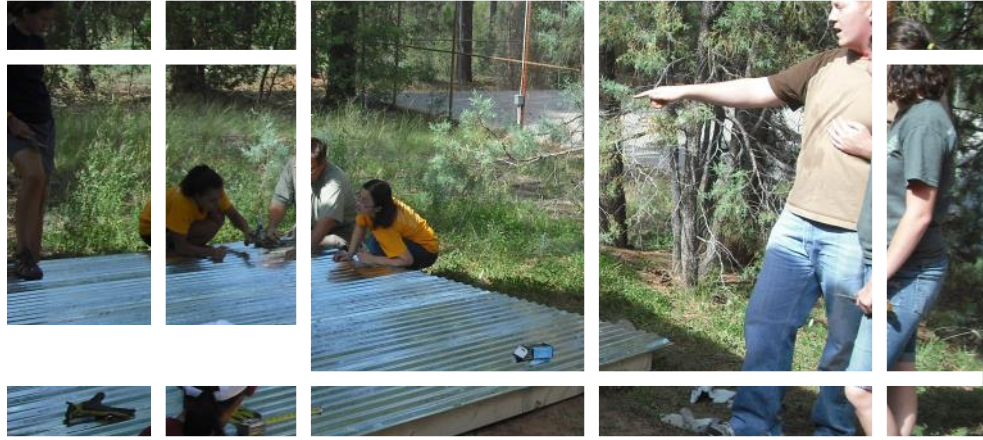


school of sustainable engineering and the built environment

civil, environmental and sustainable



sustainable
engineering

Sustainability Engineering is a revolutionary approach to long-lasting improvement of the human condition. Sustainable engineers recognize that their works are embedded in complex social, environmental, political, and economic systems that require a broader and more integrative approach than has historically been applied. Sustainable engineers are prepared to work across disciplinary boundaries and in teams. They seek a holistic understanding of complex problems that transcend the traditional boundaries of engineering, but are nevertheless amenable to analytic tools such as life cycle assessment, risk analysis and systems engineering.

The graduate curriculum in the Sustainability Engineering specialty area in the School of Sustainable Engineering & the Built Environment (SSEBE) emphasizes flexibility and individuality. Students from many different engineering and physical science backgrounds may enter this specialty area and design a plan of study that supports their original research and professional development goals. Faculty in the Sustainability Engineering specialty area study topics at the intersection of multiple fields, including engineered infrastructures, alternative energy, transportation, earth systems, hydrology and water resources and the environment.

SUSTAINABILITY ENGINEERING FACULTY

- [Braden Allenby](#), Professor
- [Mikhail Chester](#), Professor
- [Oswald Chong](#), Associate Professor
- [Mounir El Asmar](#), Associate Professor
- [Matt Fraser](#), Professor (Specialty Area Coordinator)
- [Margaret Garcia](#), Assistant Professor
- [Klaus Lackner](#), Professor
- [Kristen Parrish](#), Associate Professor
- [Thomas P. Seager](#), Associate Professor

LIST OF COURSES

Students are required to develop a POS which would generally include core courses that cover topics relevant to the intersection of sustainability and engineering including: quantitative approaches to studying sustainability; normative aspects of engineering; and integration of systems. Generally, these requirements are covered by the core courses listed below. Substitutions may be allowed subject to approval of the Specialty Area Coordinator when there a compelling pedagogical justification.

For quantitative approaches to sustainability, suitable courses include:

CEE 506 Life Cycle Assessment
CEE 598 Uncertainty Analysis for Infrastructure

For normative aspects of engineering, suitable courses include:

CEE 581: Advanced Earth Systems Engineering & Management

For integration of systems, suitable courses include

CEE 582: Industrial Ecology and Design for Sustainability
CEE 598: Socio-Hydrologic Systems Analysis

Related class work in other specialty engineering areas:

Graduate students with an interest or background in environmental, construction, chemical, industrial and other engineering disciplines can take course work in these specialty areas upon approval of the Specialty Area Coordinator. For those classes offered outside the department, the SSEBE advising staff may not be able to properly advise the student or state when these classes are offered. Given below is a partial list of related CEE, CON and courses from other engineering departments relevant to sustainable engineering that can be included in a student's POS (also subject to approval of the Specialty Area Coordinator):

CEE 507: Urban Infrastructure Anatomy and Sustainable Development
CEE 516: Sustainable Energy and Material Use
CEE 598: Carbon Capture Technology
CEE 598: Carbon Storage Technology
CEE 598: Sustainable Transportation Systems
CEE 598: Sustainable Civil and Environmental Systems Engineering
CEE 598: Smart City Sustainability and the Environment
CEE 598: Urban Water System Design
CEE 598: Environmental Data and Analysis
CON 598: Sustainable Construction
CON 598: Front-end Planning
CON 598: Energy Retrofits
CON 598: Green Buildings and Infrastructures
IEE 534: Supply Chain Modeling and Analysis
IEE 556: Intro to Systems Engineering
IEE 569: Advanced Statistical Methods
IEE 572: Design of Engineering Experiments
IEE 598: Sustainable Manufacturing

Upon approval of the Specialty Area Coordinator, a maximum of 2 professional elective classes (or 6 credits) can be taken outside engineering in such departments as the School of Sustainability, the Design School, the College of Liberal Arts and Sciences, or the School of Life Sciences.

M.S. PROGRAM

During their first semester of enrollment, MS students should identify a faculty Advisor to serve as Chair of a Graduate Supervisory Committee (GSC). The Advisor must be approved by the Graduate College, be a member of the Sustainable Engineering faculty, and (in consultation with the student), establish a GSC composed of a minimum of three faculty, including at least two from the Fulton Schools of Engineering (with at least one from the Sustainability Engineering faculty). Thus, a majority of the committee shall be tenure-track Fulton Schools of Engineering faculty.

Each student will establish an individual POS for approval by the GSC, in accordance with Graduate College and Civil, Environmental and Sustainable Engineering (CESE) Program requirements. The candidate must complete at least 30 semester hours of approved course and can complete research work (including the required core classes), subject to the following constraints:

1. Not more than three (3) hours may be seminar credit.
2. Six (6) hours must be CEE 599: Thesis credits OR three (3) credits towards an independent design project CEE593: Applied Project
3. Not more than three (3) hours may be CEE590 (Reading and Conference) taken under the supervision of any one faculty member serving on the GSC.
4. A student must be registered for at least one credit every fall and spring until he/she has officially completed their degree program requirements.

The six hours of thesis credits must reflect an acceptable original and independent thesis demonstrating the student's mastery of sustainable engineering science. The student must present the thesis to the GSC and the public, and pass an oral exam in defense of the thesis to a faculty committee of at least three members. The three hours of credits towards an applied project must demonstrate that the student can undertake sustainable research relevant to a practical project including problem identification, literature search, research analysis, documenting results and presenting the results. A short written report or a technical paper should be submitted to the supervising faculty member.

It is important for all doctoral students to read the [Civil, Environmental and Sustainable Engineering Ph.D. program manual](#).