

MCHE 2990: Engineered Systems in Society

Course Description

Engineering challenges of the 21st century are increasingly complex and situated within larger socio-cultural, ecological, and economic systems. The ability to understand, analyze, and navigate these systems is crucial in preparing students for the workplace of the future. Building on the foundations of engineering design established in MCHE 1940 (Mechanical Engineering Design Studio and Professional Practice), this course focuses on design, ethical decision-making, and communication in contemporary, socio-technical settings.

Instructor

Dr. Nicola Sochacka (sochacka@uga.edu)

Meeting times and place

3.30-4.45pm, Tues/ Thurs, Driftmier 1234

Course Objectives:

In this course, students will:

1. Acquire the language and skills necessary to identify and solve complex, socio-technical problems in engineering practice settings.
2. Gain an understanding of historical and contemporary perspectives on ethical decision-making in engineering.
3. Learn and practice key skills for communicating effectively in the modern engineering workplace.
4. Study contemporary engineering case studies.

Required Supplies

The following Course Packet is required and available for purchase at Bel-Jean Copy/Print Center (For directions see: <http://www.bel-jean.com/>):

MCHE 2990: "Engineers, technology, and the social: Exploring relationships in socio-technical systems"

Important Dates

See <https://reg.uga.edu/general-information/calendars/academic-calendars/>

Grading

Course grades will be based on performance on written assessments, group projects, and class participation. A weighted average grade will be calculated as follows:

Participation	30%
Mid-term exam	10%
Projects	25%
Project presentations	10%
Final exam (a minimum grade of 50% is required to pass the course)	25%

The final class grades will be based on the following scale:

92-100	A
89-91	A-
86-88	B+
82-85	B
79-81	B-
76-78	C+
72-75	C
66-71	C-
60-65	D
<60	F

Attendance Policy

Students who miss a class should work with other students in the course, and their group, to make up any missed work. Documentation for medical absences should be submitted via email to the instructor as soon as possible, but no later than a week after the missed classes.

In this active-learning and team-based class format, attendance is particularly important, and your final grade may be impacted if you miss too many classes.

This said, I will not keep track of student attendance. It is up to you to ensure that your level of attendance is sufficient to meet your learning goals for this course.

Academic Integrity

All academic work must meet the standards contained in *A Culture of Honesty*.¹ Please be familiar with the *A Culture of Honesty* policy and handbook. I refer you specifically to the UGA Student Honor Code, which states, “I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others.”

All suspicions of academic misconduct will be submitted to the Academic Honesty Office. If you are found guilty of academic misconduct, you will be given a zero for that assignment and incur one or several of the following consequences: final course grade of “F,” placement of a dishonesty transcript notation, suspension, dismissal, or expulsion. If you have a second case of academic misconduct (over the course of your time at UGA) you will receive placement of a dishonesty transcript notation and one of the following consequences as determined by a review board: suspension, dismissal, or expulsion. **If you are unsure of whether something may be considered academic misconduct, please discuss your dilemma with me or with someone at the academic honesty office before turning in the assignment.** See <http://www.uga.edu/honesty/> for more details.

My commitment to you

You can expect me to be courteous, respectful, and punctual; well-organized and prepared for in-class activities; answer questions clearly and in a non-negative fashion; and grade uniformly and consistently according to posted guidelines.

¹ https://honesty.uga.edu/resources/documents/academic_honesty_policy_2017.pdf

Consulting with me

You are encouraged to approach me to ask any questions you have about either the course content or structure. In order for your peers to benefit from you question, please consider asking your questions during class time. For other inquiries, please email me to set up an appointment. Please consult your course documents and work with your peers to exhaust all options to answer your question prior to making an appointment.

Engineering Accreditation ABET (2019-2020 cycle)

The programs in the UGA College of Engineering are accredited through ABET, a nonprofit, non-governmental organization that accredits college and university programs in the disciplines of applied science, computing, engineering, and engineering technology. ABET accredits over 3,100 programs at more than 670 colleges and universities in 24 countries.

Criterion 3 Student Outcomes and coverage in the course:

ABET Student Outcome	Relevant Course Objective	Assessment Method(s)
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	1. Acquire the language and skills necessary to identify and solve complex, socio-technical problems in engineering practice settings	Participation
2. 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	1. Acquire the language and skills necessary to identify and solve complex, socio-technical problems in engineering practice settings 4. Study contemporary engineering case studies	Participation, Projects, Mid-term exam, Final exam
3. an ability to communicate effectively with a range of audiences	3. Learn and practice key skills for communicating effectively in the modern engineering workplace	Participation
4. 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	2. Gain an understanding of historical and contemporary perspectives on ethical decision-making in engineering 4. Study contemporary engineering case studies	Mid-term exam, Final exam

5. 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	3. Learn and practice key skills for communicating effectively in the modern engineering workplace	Participation, Projects, Project presentations
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See: <https://www.abet.org/accreditation/accreditation-criteria/criteria-for-accrediting-engineering-programs-2019-2020/#GC3>

Engineering Professionalism Policy

Engineers work in interdisciplinary teams to contribute to the betterment of society for all. The engineering profession is governed by a code of ethics, which is available here: <https://www.nspe.org/resources/ethics/code-ethics>. Engineering faculty at UGA expect students to act in a professional and considerate manner at all times, and to develop the orientations required for an impactful and meaningful engineering career.

Accommodations

Students with disabilities who require accommodations in order to participate in course activities or meet course requirements should contact the Disability Resource Center [Phone (706) 542-8719]. Your professor will devise reasonable accommodations based on the recommendations of the Disability Resource Center. Visit <http://drc.uga.edu/> for more information.

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.