

**Course number and name:**

EL 4334 – CRN 29021—Engineering Leadership Practice, Ethics & Professionalism

**Course Description:**

This course is designed to engage ESE students in ethical practices, based upon principles, theory and professionalism in science and engineering careers. The process of engaging in case studies is utilized to enable students to explore the relationship between ethics and the practice of scientific and engineering research. This proceeds within a problem-solving and practice-basis leaning on precedence, founded upon a background of the application of classical moral theory and decision making to engineering and scientific issues, as encountered in academic and professional careers of our time.

Our society places a great deal of responsibility on professionalism and requires that engineers and scientists practice according to codes of ethics. Students will study real world case studies that help them to become informed of issues, roles and responsibilities of engineering and science professionals in community, government, corporations, and industry.

**Course Credit:** 3 SCH**Contact Hours:** 3 Lecture**Prerequisites:** ESE doctoral standing and advisor or instructor approval, and / or EL advisor approval**Cross/Co-listed with:** EL 5320**Co-requisites:** N/A**Instructors:** Peter Golding and Luis Perez**Textbook(s) & required materials:**

- Speight, James G. and Foote, Russell, Ethics in Science and Engineering, Scrivener Publishing LLC, April 2011.
- Stephens-Davidowitz, Seth. Everybody Lies: New Data, and What the Internet Can Tell Us About Who We Really Are, Dey St., William Morrow (2017).
- Mark Manson, The Subtle Art of Not Giving a F\*ck: A Counterintuitive Approach to Living a Good Life, Harper One (2016).
- Resources from the Murgough Center for Engineering Professionalism: [Gilbane Gold](#) © 1989, [Incident at Morales](#) ©2003 (produced with major support from the National Science Foundation), and [Henry's Daughters](#) © 2010. Starrett, S., Laray, A.L., and Bertha, C. (2017). Engineering Ethics: Real World Case Studies.

**Course Learning Outcomes:**

ESE and EL students will learn:

1. An understanding of their duties and responsibilities as professionals through gaining knowledge of the philosophies of ethics, professional practice, and world culture.
2. Basic knowledge of the codes of ethics in science and engineering and society.
3. Improved awareness of potential ethical issues within science and engineering contexts
4. Team skills through working in teams on assignments and in-class assignments
5. The value of leadership principles in professionally managing 1. through 4.
6. Know some of the classic cases as well as contemporary issues in ethics; including conflicts of interest, whistleblowing
7. An understanding of how societal morals varies with culture and how this influences ethical thought and action
8. Improved communications skills with regard to ethical and professional issues in STEM.

**Contribution to Doctoral and Undergraduate professional learning components:**

Scientific and Engineering professional practice, STEM leadership and management, professional communication, project management.

**Relationship to Program Outcomes:**

- An ability to recognize ethical and professional responsibilities in science and engineering research, professionalism and practice situations; to make informed judgments, which must consider the impact of technological solutions in global, economic, environmental, sustainability, 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.

**Grading Scheme:**

A: 90-100 B: 80-90 C: 70-80 D: 60-70 F: <60  
Progress Presentations & Participation: 20%  
Homework: 20%  
Major Individual and Team Projects: 40%  
Mid-Term & Final Exam: 20% (10% each)

**Sample Topics:**

Professional practice of science and engineering, Professional societies, Science and engineering disciplines and ethics, Case studies in STEM ethics, STEM and society, ESE and culture.