1. *Course number and name*

**ENGR 100: Introduction to Engineering**

1. *Credits and contact hours*

3 credits; two 50-minute lecture sessions/week and one 100-minute activity session/week; engineering topic

1. *Instructor’s or course coordinator’s name*

Instructors: Stephanie Claussen, Jenna Wong, George Anwar, and Xiaorong Zhang

Course coordinator: Stephanie Claussen

1. *Text book, title, author, and year*

Technical Writing Essentials, Suzan Last, 2019 (open source textbook)

1. *other supplemental materials*

Readings from online and scholarly articles.

CATME account

1. *Specific course information*
2. *brief description of the content of the course (catalog description)*

Introduction to engineering skills, mindsets and values, with an emphasis on community-engaged and socially-just engineering practices. Project-based learning through open-ended engineering design. Description of the major engineering fields and the day to day activities of engineers. Emphasis on diverse forms of written communication. Engineering professionalism, ethics and responsibility, lifelong learning, and career planning.

1. *prerequisites or co-requisites*

 High school algebra and trigonometry.

1. *indicate whether a required, elective, or selected elective course (as per Table 5-1) in the program*

Required for Civil, Computer, Electrical, and Mechanical Engineering.

1. *Specific goals for the course*
2. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

1. Describe the scope of multiple engineering disciplines and their impact on public health, safety, and welfare, as well as global, cultural, social, environmental, and/or economic issues.

2. Identify their degree requirements and the expected coursework, develop a plan for graduation, and locate campus resources that are available to provide support.

3. Utilize peer-reviewed technical literature and other engineering references, including summarizing important concepts from articles and engaging in the technical writing process (identifying audience, outlining, drafting and revising). Synthesize gathered information, appropriately cite it, and effectively present ideas in both written and oral form.

4. Describe and implement the engineering design process through an open-ended design project. This includes defining a problem, gathering stakeholder input, creating basic prototypes, and iterating on their design.

5. Demonstrate skills needed for responsible engagement with communities, including active listening and learning from the communities.

6. Describe and access resources and opportunities for career development and lifelong learning. Develop and state their career goals.

7. Identify how their past interests and experiences led them to pursue a degree in engineering. Identify their unique assets and how they can leverage these assets in their work as engineers. Describe ways to support future engineering students from underrepresented communities/groups.

8. Identify professional standards that guide those in the engineering profession, including technical standards and regulations, codes of ethics, and analysis frameworks for social responsibility within engineering.

1. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s):

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.

3: an ability to communicate effectively with a range of audiences.

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.

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.

7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

1. *Brief list of topics to be covered*
* Effective collaboration and teamwork
* Engineering design processes
* Problem definition
* Identifying and engaging with project stakeholders
* Technical communication
* Creating and utilizing prototypes
* Social and environmental justice
* Engineering ethics
* Assessing risks and values
* Professional writing and communication
* Introduction to the engineering disciplines
* Navigating and accessing academic and professional resources