COURSE OUTLINE : ENGR 100
D Credit – Degree Applicable
COURSE ID 001463
Cyclical Review: September 2020

COURSE DISCIPLINE : ENGR

COURSE NUMBER : 100

COURSE TITLE (FULL) : Introduction to Engineering

COURSE TITLE (SHORT) : Intro to Engineering

CALIFORNIA STATE UNIVERSITY SYSTEM C-ID : ENGR 110 – Introduction to Engineering

CATALOG DESCRIPTION

ENGR 100 provides students with an understanding of the academic and professional attitudes, behaviors and skills necessary to enhance their ability to succeed as an engineering major. The general definition of engineering as well as the job functions of various engineering disciplines of engineering are examined. Working effectively in teams, goal setting, time management, self-improvement, methods of learning, and development of oral and written technical communication skills are practiced. Students are introduced to the campus resources available to engineering majors and learn how to orient themselves to the science and engineering educational system. Instruction includes an introduction to the methods and tools of engineering problem solving and design including the interface of the engineer with society and engineering ethics.

Total Lecture Units: 3.00

Total Laboratory Units: 0.00

Total Course Units: 3.00

Total Lecture Hours: 54.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 54.00

Total Out-of-Class Hours: 108.00

Recommended Preparation: ENGL 100 or ESL 151, or equivalent.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ENGL	100	Writing Workshop	write an argumentative essay that has an introduction, body paragraphs, and a conclusion, demonstrating a basic understanding of essay organization;	Yes
2	ENGL	100	Writing Workshop	write an argumentative essay that addresses the topic, is directed by a thesis statement, uses appropriate textual evidence, develops logical interpretations, and concludes with some compelling observations;	Yes
3	ENGL	100	Writing Workshop	write an argumentative essay that integrates the ideas of others (i.e., authors) through paraphrasing, summarizing, and quoting with correct citation techniques;	Yes
4	ENGL	100	Writing Workshop	write compositions (e.g., summaries and argumentative essays) that are easy to read and follow, though some errors in grammar, mechanics, spelling, or diction may exist;	Yes
5	ESL	151	Reading And Composition V	summarize readings;	Yes
6	ESL	151	Reading And Composition V	compose a 500 to 550-word essay which: summarizes and cites appropriately a reading passage; includes a clear thesis statement; uses evidence to support the thesis; shows clear organization into an introduction, body, and conclusion;	Yes
7	ESL	151	Reading And Composition V	employ basic library research techniques;	Yes
8	ESL	151	Reading And Composition V	compose one research paper (1,000 words) or two short research papers (500-700words each) with citations.	Yes

EXIT STANDARDS

1 Identify the various engineering disciplines and the industries in which engineers work;
2 discuss the job functions of an engineer;
3 describe the role of engineers in society;
4 identify and describe academic pathways to bachelor's degrees in engineering;
5 recognize, develop and implement effective strategies to succeed academically in engineering;
6 explain academic ethical principles and its connection to professional engineering ethical practices and standards
7 demonstrate knowledge of effective technical writing and oral presentations;
8 identify the components of the engineering education system;
9 identify the factors that affect personal growth and development;
10 analyze and explain an engineering problem using the engineering design process;
11 demonstrate teamwork skills in working on an engineering design team.

STUDENT LEARNING OUTCOMES

1 formulate a definition of engineering and explain the role of engineering in society
2 clarify their academic engineering career goals by researching various engineering disciplines and committing to a specific engineering major
3 demonstrate methods of improving academic and personal skills for success in engineering education

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Overview of the Keys to Success in Engineering Education • Characteristics of successful engineering students • Definition of success • Importance of goal clarification and goal setting • Effort, attitude and approach • Models of engineering education	8	0	8

2	The Engineering Profession • What is engineering? • Resources for learning about engineering • Comparison of engineering, science and engineering technology • Introduction to the engineering design process • Steps in the engineering design process • Analysis and problem solving • Failure as part of the engineering design process • How things work and reverse engineering • Teamwork and the need for diversity in the design process • Creativity in engineering design • Case studies of engineering design • Modern engineering computer analysis tools and practices • Rewards and opportunities of an engineering education • Engineering history and greatest achievements • Engineering disciplines; civil, computer, electrical, mechanical, manufacturing, aerospace, etc. • Engineering job functions and industries • Employment opportunities • Important engineering fields for the future • Sustainability • Engineering as a profession • Professional registration • Professional societies • Industry standards • Ethical aspects of engineering and professional engineering standards	12	0	12
3	The Teaching/Learning Process • What is learning? • Cognitive, psychomotor and affective learning • Metacognition • Understanding the teaching process • Mistakes students make and how to seek help	6	0	6
4	Making the Most of How You are Taught • Early course preparation • Making effective use of the professor • Utilizing academic resources	4	0	4
5	Making the Learning Process Work for You • Learning skills • Time management • Test taking and study skills • Collaborative learning and effective use of peers	4	0	4

6	Personal Growth and Development • Personal development • Understanding yourself and others • Maslow's hierarchy of needs • Self-esteem • Ethnic and gender differences	6	0	6
7	Broadening Your Education • Communication skills • Importance of student organizations • Pre-professional employment	6	0	6
8	Orientation to Engineering Education • Organization of engineering education • Role of community colleges • Academic pathways in engineering • Academic advising and regulations • Student conduct and academic ethics • Graduate study and engineering as preparation for other careers	8	0	8
				54

OUT OF CLASS ASSIGNMENTS

1 calculations (e.g. calculate grade point average);
2 field trips (e.g. visit a local engineering company or engineered landmark structure such as a bridge);
3 short essays (e.g. write a paragraph or one page paper on the benefits of an engineering education);
4 presentation (e.g. write a PowerPoint poster or presentation on a specific field of engineering);
5 design project (e.g. demonstrate the engineering design process by designing a product or process using engineering design process steps such as customer need, information gathering, analysis, prototyping and iteration).

METHODS OF EVALUATION

1 quizzes (e.g. quizzes on textbook content);
2 projects. (e.g. working is small groups, design and build a chair out of cardboard in 45 minutes);
3 oral reporting of group design projects;
4 final presentation. (e.g. short oral presentation based on some aspect or discipline of engineering);
5 final examination.

METHODS OF INSTRUCTION

- [x] Lecture
- [ ] Laboratory
- [ ] Studio
- [x] Discussion
- [x] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [x] Collaboratory Learning
- [x] Demonstration
- [x] Field Activities (Trips)
- [x] Guest Speakers
- [ ] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Studying Engineering: A Road Map to a Rewarding Career	Required	Discovery Press	5	print	Raymond Landis	978-0-9793487-2-3	2018