ENGR 101 Course Outline as of Fall 2021

CATALOG INFORMATION

Dept and Nbr: ENGR 101 Title: ENGR DESIGN PROJECT Full Title: Engineering Design Project Last Reviewed: 4/13/2020

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.00	Lecture Scheduled	0.75	17.5	Lecture Scheduled	13.13
Minimum	1.00	Lab Scheduled	0.75	2	Lab Scheduled	13.13
		Contact DHR	0		Contact DHR	0
		Contact Total	1.50		Contact Total	26.25
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 26.25

Total Student Learning Hours: 52.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:

Students will work in small groups to investigate, choose, refine and construct engineering design projects. This hands-on class allows participants to develop their engineering skills in a team-oriented environment.

Prerequisites/Corequisites:

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:

Description: Students will work in small groups to investigate, choose, refine and construct engineering design projects. This hands-on class allows participants to develop their engineering skills in a team-oriented environment. (Grade or P/NP) Prerequisites/Corequisites: Recommended: Limits on Enrollment:

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: CSU GE:	Area Transfer Area	Effective: Effective:	Inactive: Inactive:
IGETC:	Transfer Area	Effective:	Inactive:
CSU Transfer:	Effective:	Inactive:	
UC Transfer:	Effective:	Inactive:	

CID:

Certificate/Major Applicable:

Major Applicable Course

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Apply the individual and team skills appropriate for functioning as an engineering professional.

2. Complete small scale projects related to an engineering discipline of their choice.

Objectives:

At the conclusion of this course, the student should be able to:

- 1. Define, describe, and employ standard team member roles and behaviors in an engineering design environment.
- 2. Define, describe, and employ team management and project planning skills in an engineering design environment.
- 3. Organize presentation and associated materials to present project information in a clear and concise manner.
- 4. Apply simple construction, manufacturing, or assembly processes related to at least one engineering discipline.

Topics and Scope:

Topics will include, but not be limited to:

- I. Team Roles and Individual's Behaviors
 - A. Team interaction goals
 - B. Facilitator, Timekeeper, Recorder, and other roles
 - C. Appropriate and inappropriate behaviors
 - D. Participation levels: Hibernator vs. Dominator
- II. Team Time Management
 - A. Setting realistic team goals
 - B. Appropriate allocation and scheduling of hours
 - C. Follow-up and accountability mechanisms
 - D. Overview of engineering design algorithms

- **III. Oral Presentation Basics**
 - A. Determining target audience and the corresponding requirements
 - B. Selecting and preparing presentation materials
 - C. Paring material and topics to time constraints.
 - D. Pace, volume, posture, and related presentation mechanics
- IV. Project Identification
 - A. The internet as a design reference
 - B. Technical journals as design references
 - C. Limiting project scope
 - D. Planning documents
- V. Refinement Processes
 - A. Materials selection
 - B. Choosing connections
 - C. Construction options
 - D. Surface finishing
 - E. Aesthetic concerns
 - F. Cost/benefit analysis
- VI. Technology Training (as needed)
 - A. Hand tool basics
 - B. Machine shop material processing
 - C. Welding and joining processes
 - D. Electronics assembly
 - E. Software programming
 - F. 3D printing
- Lab Related Activities
- I. SRJC Facility Training Visits
 - A. Industrial Trade Tech (ITT) machine shop
 - B. ITT welding shop
 - C. ITT casting room
 - D. Engineering and Applied Technology (E&AT) electronics labs
 - E. E&AT maker space
 - F. E&AT computer aided design labs
 - G. E&AT virtual reality labs
 - H. E&AT materials lab
- II. Possible Field Trips
 - A. Local engineering company facilities
 - B. Local maker spaces
 - C. Maker Faire

Assignment:

Integrated Lab/Lecture Assignments:

- 1. Planning document(s) including project goals, specifications, and timelines (1 to 5)
- 2. Meeting minutes and/or logs (3 to 6)
- 3. Progress report(s) detailing project status (1 to 3)
- 4. Oral presentation(s) on project status (1 or 2)
- 5. Self and team assessment report
- 6. Training-related assignments (as needed)
- 7. Final project construction and demonstration

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Planning document(s), meeting minutes and/or logs, progress and assessment reports

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Oral presentation(s), training assignments (as needed), final project and demonstration

Exams: All forms of formal testing, other than skill performance exams.

None

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation

Representative Textbooks and Materials:

Engineering Design: An Introduction. 2nd ed. Karsnitz, John and O'Brien, Stephen and Hutchinson, John. Cengage. 2013 (classic) Instructor prepared materials

nt m	Writing 0 - 0%
s, that	
	Problem solving 20 - 40%
g skill	
final	Skill Demonstrations 30 - 50%
	Exams 0 - 0%
ally	
	Other Category 10 - 30%