INTRODUCTION TO ENGINEERING

ENGR 100A – Section 73398
Santa Ana College Department of Engineering
Spring 2026

Class Meetings:	Thursday, 1:40 – 4:50 pm	Room SC-134
Units:	3	
Instructor:	Craig Takahashi, Ph.D.	takahashi_craig@sac.edu
Office hours:	provided in class	

Description:

The course explores the branches of engineering, the functions of an engineer, and the industries in which engineers work. Explains the engineering education pathways and explores effective strategies for students to reach their full academic potential. Presents an introduction to the methods and tools of engineering problem solving and design including the interface of the engineer with society and engineering ethics. Develops communication skills pertinent to the engineering profession.

Student Learning Outcomes
Students will be able to: (1) demonstrate knowledge & skills necessary to select and develop engineering careers, (2) demonstrate ability to complete a project as part of a design team.

Textbook & Materials
1. Materials for design projects – (1) Arduino kit for EE project (~$45), (2) Mechanical puzzle for ME project (~$30 - $60, or more is optional, but not required).

2. Scientific calculator (calculator software on computers or cell phones are fine), USB flash drive

Grading
Grading is determined on a percentage system, not on a curve. Note – I do not GIVE out grades, you EARN them! Grading is based on mathematical computation, not by my manipulation or your life circumstances. A final score within 0.5% of the next higher grade is rounded up (e.g., 79.50% = B; 79.49% = C). A final score within 1.00-0.51% of the next higher grade, will round up to the next grade (e.g., 79.0 to 79.49% gets a B) ONLY IF the student does not "miss" (i.e., score < 50%) on more than 1 assignment for the whole semester. NO score > 1% from the next higher grade will round up (e.g., 78.9999 gets a C no matter what).

Grading Scale		Weighting of grades	
A = 90 – 100%		Exams	40%
B = 80-89%	D = 60-69%	Homework	30%
C = 70-79%	F < 60%	Projects	30%

Tentative Schedule (SPRING)

Wk	Date	Topic	Wk	Date	Topic
1	2/12	Administrative & Intro, Syllabus	**9**	4/16	**Exam 3,** EE Proj, Trig Lab – EE Project
2	2/19	Engineering Profession Lab/tech – bridge design intro Lab – start CE	10	4/23	ME (Mechanical E), ME Project **EE Project Due** Lab – start ME project Hw 6 due - ME proj Qs
3	2/26	**Exam 1**, Design & AutoCAD Lab – AutoCAD, CE Project Hw 1 due - Syllabus Qs	11	4/30	Machine Efficiency Lab – ME project Hw 7 - ME proj kit
4	3/5	Bridge Project Calcs Lab – CE Proj Hw 2 due - CE Project Qs	**12**	5/7	**Exam 4**, Solidworks Lab – Solidworks, ME Proj
5	3/12	Civil Engineering (CE) Lab – CE project	13	5/14	Engr Education Personal Growth, Learning Lab - ME project Hw 8 - 3D model
6	3/19	**Exam 2**, EE & EE Project Lab – CE Project Hw 3 due – Arduino kit	14	5/21	Other Branches Lab – ME project
7	3/26	**CE Project Due** Lab - CE project presentations Hw 6 due – 2D CAD Drawing	15	5/28	Pursuing Engr / SAC Progs Lab – ME project
8	4/2	(Open Day - guest speaker?) Lab – EE Project Hw 5 due - EE Project Qs	**16**	6/4	**ME Project Due, Exam 5**
Sp	4/9	**Spring Break**			

Online Communication

Students must be capable of electronic communication.

Course Website - most course items are posted on a course website (provided in class), NOT Canvas.

Canvas - students must know Canvas (rsccd.instructure.com/login/ldap), a web based course management software. Contact Distance Education (714-564-6725, Room A-101, sac_disted@sac.edu) for Canvas issues. Canvas is mainly used to post grades and, for some classes, also to submit work and take exams. Canvas use is subject to change based on instructor discretion.

Email - I regularly send class-wide emails using email addresses from the SAC enrollment system (Self Service), not Canvas, so you MUST have a valid email on this system. Students who miss emails (e.g., not checked, or incorrect/inactive email indicated on SAC system) must obtain the information from classmates. When emailing me, always indicate which class you are in (E.g. Engr 235). If you change your email address in SAC enrollment system, notify me by email, indicating the class of mine you are in.

It is YOUR responsibility to check Canvas, the course website, and email regularly.

Assessments:

- *Homework* - submissions may be in class (due at start of class) or digital uploads to Canvas (due dates/time specified on Canvas) as determined by instructor. Late work is receives no credit. Paper submissions must be on WHITE COPY PAPER & be labeled in the upper right of the front sheet with student first & last name, course #, & hw # (e.g., John Doe, Engr 100A, hw #1). Digital notes (eg - One Note) are fine but print on plain white paper and black writing. Engineering paper, graph or heavy lined paper is not acceptable as it is hard to see your work. Work must be submitted with problems in the order assigned and with upright orientation or points will be deducted. Emailed work and work attached in comments on Canvas are not accepted. The lowest assignment score will be dropped (Canvas drops the lowest grade automatically from day one). Hw format and upload requirements will be discussed in class & must be met for full credit. Students having trouble meeting upload requirements may be required to submit work on paper.
- *Exams* - (**5 exams**) exams must be taken during the allotted time (not before, not after) IN class. There are NO make-up exams. Instead lowest exam score is dropped. Instructor may change exam start time at the last moment to any time during the class session (regardless of what is shown on Canvas), so make sure you are here at class start time.
- *Projects* - (see tentative schedule) - NO late projects!
- *Lab work, conduct, safety* - applicable to classes with lab or hands-on activities (eg - lab, hw, projects, etc). Lab work is related to completion of hands-on exercises. Part of your lab (or hw or project) grade is "lab conduct", which is based on how well students clean up, stay organized, and maintain lab safety. Lab safety is critical in a lab environment & it is part of your grade. Safety procedures handouts will be provided. Students must pass a safety exam prior to using the lab. Students must report any safety infractions by submitting a mandatory incident report to the instructor. Students who fail to report or who have repeated incidents may loose their lab privileges. Students who do not demonstrate the ability to work safely in lab may be restricted from using equipment and tools as determined by the instructor. All fabricated parts must have instructor pre-approval. Inappropriate items (weapons parts, offensive items, etc.) are prohibited.

Course policy and conduct

- *Academic Honesty* - students are encouraged to communicate with classmates about course concepts (e.g., study groups) but may only turn in their own work. Graded work (assignment, exam, etc.) deemed plagiarized or copied receives a score of 0 (for both the copier and the one who allowed the copying). More generally, academic honesty policy of this course, including any resulting disciplinary action, is per the college catalog.
- *Grading* - students may challenge a grade on a graded work by submitting a GRADE REVIEW request using the following procedure: *Type* the request with a cover sheet having your full name, student number, date, description of the work in question, detailed explanation of why you feel the grade was incorrect, and a rationale for a higher score (using sketches or drawings if necessary). Submit the request within 1 week of the work being returned (except work in the last week of class, where it must be submitted within 2 days). A review evaluates the *entire* assignment, not just the questionable issue. Thus, a review may result in a lower overall score. Grades incorrectly entered on Canvas do not require a review, but students must notify instructor within 7 days of the grade posting (show or email a picture of the grade on the work). Students must use techniques and methods taught in THIS class for full credit. Partial credit is at instructor's discretion.
- *Attendance/absences* - the instructor has the authority to drop any student for excessive absence as defined in the college catalog. Class meetings missed prior to adding class are also considered absences. Attendance is based on when the instructor takes roll, but it also requires student presence for the entire meeting time. Students are considered absent if they arrive late, leave early, or disappear in-between. Students who miss class are to obtain any missed material from a classmate.
- *Lack of participation drop & grade policy* - the instructor has the authority to drop students for lack of participation per the college catalog. Participation means turning in graded assignments & taking exams. Graded work scoring < 50% is considered "missed." Attending class alone is not participation.

- *Withdraws* - students are responsible for dropping themselves from courses they no longer wish to complete. Withdraw policies, including withdraw deadlines, are specified in the college catalog. Dropped students may be reinstated at the instructor's discretion.
- *Student with Disabilities* - students requesting academic accommodations for a verifiable disability must provide the instructor an official SAC DSPS (Disabled Student Programs & Services) form completed and signed by SAC DSPS officials. Submit this form in the first 2 weeks of class. NO accommodations will be provided prior this submission. NO accommodations will be provided unless the form is submitted to instructor at least 2 days to the graded activity, and the student and instructor have met to discuss the accommodations.
- *Cell Phones or Technology* - Silence cell phones. Disruptive students may be removed from class. No recordings (e.g., audio or video) are permitted without prior instructor approval.
- *Food* - food and drink are not permitted in the classrooms. Water in a closable container is okay.
- *Other* - any student claims about something I verbally "allowed" (e.g., "you said there was no hw", "you said I could miss most of the lecture", etc.) must be substantiated with some type of verifiable documentation (usually an email from me). If it isn't documented, it didn't happen. Missed work gets a 0.
- *Digital submissions* - some work may be submitted digitally. Students must have the ability to produce digital documents (usually jpg or pdf, and for videos, mp4) and upload those to Canvas. The instructor will provide further details on the rules for submitting work on Canvas. Documents must be uploaded properly for full credit.
- *Illness procedures* - avoid coming to class if you are sick (covid or any other respiratory or contagious illness). The instructor will try work with you to figure out how to accommodate lost class time due to illness. Cover coughs and sneezes. Please wear a mask & try to maintain social distance from other people.

Engineering Dept Mission Statement: Santa Ana College engineering department prepares students for university transfer or employment in engineering and engineering-related fields.
SAC Mission Statement: Santa Ana College inspires, transforms, and empowers a diverse community of learners.