ECE102
Spring 2025
14-week

SCOTTSDALE COMMUNITY COLLEGE
A MARICOPA COMMUNITY COLLEGE

Course Information

Semester & Year:	Spring 2025
Course Title:	Engineering Analysis Tools and Techniques
Course Prefix & Number:	ECE102
Section Number:	29729
Credit Hours:	2
Start Date – End Date:	Jan 27, 2025 - May 8, 2025
Room Number:	in-person at CM466
Meeting Days:	Mon/Wed
Meeting Times:	9:45-11:45 am

Course Format

The course format for this course is 14-week in-person. We meet on Mondays and Wednesdays in CM466. The class time will be spent on lectures and lots of group work.

Instructor Information

Instructor:	Paniz Tavassoli
Email:	paniz.tavassoli@scottsdalecc.edu
Phone:	(480) 423-6015
Office Location:	CM-427
Office Hours:	Mon/Wed 9 - 9:30 AM and 12 – 12:30 PM Thursday 9 - 9:30 AM and 12 – 2:30 PM

Course Description

Learning culture of engineering, engineering use of computer tools, and computer modeling as applied to engineering analysis and design

Pre- and Co-requisites

Pre-requisites: none

Co-requisites: MAT182 or higher, or Permission of instructor

Course Competencies

1. Use effective student success strategies.
2. Describe the primary elements of the engineering profession, including the major engineering subspecialties and the type of projects they work on.
3. Set personal, academic, and career goals to guide success in college studies
4. Effectively communicate qualitative and quantitative information orally, visually, and in writing.
5. Use an engineering design process to propose solutions to real-world problems.
6. Work effectively in collaborative teams on engineering projects.
7. Apply appropriate problem-solving techniques to engineering problems using graphical, mathematical, written, and computer modeling tools.
8. Use spreadsheets to organize information and develop numerical and graphical models to engineering problems.
9. Interpret and analyze data from spreadsheets and discuss the results in written reports.
10. Accurately incorporate units and dimensions when solving engineering problems.

Texts and Course Materials

All curriculum materials are Open Educational Resources (OER), which will be distributed through the course website (Canvas). This means students don't need to buy a textbook.

Required Course Materials

- No textbooks
- Calculator (TI-83/84 recommended)
- Computer with internet access
- Webcam and Microphone (for communicating during office hours)

Course Technologies

View the Accessibility Statements & Privacy Policies of technologies used in this course.

Maricopa Systems

This course uses key Maricopa systems for course management and communication.

- Canvas Learning Management System
- Student Maricopa Gmail Account

Synchronous Communication Tools

This course implements the use of web conferencing and/or other synchronous course tools.

- Google Meet, Docs, and Slides

Streaming Media/Audio/Video Tools

This course uses YouTube videos

Student Assignment Tools

This course requires students to participate in or submit assignments using desktop or cloud-based applications.

- Google Products
- Microsoft Office (can be accessed freely through mySCC)

Course Policies

The following are policies specific to this course. Students are also responsible for the college policies included on the Student Regulations page of the Maricopa Community College District website. This syllabus is subject to change as needed to accommodate the needs of the class.

Instructional Contact Hours (Seat Time)

This is a two (2) credit-hour course with a lab time component, in a condensed (8-week) format. Each week on average, plan to spend 7 hours on instruction and 8 hours on assignments.

Response Time, Grade Protests

Students can expect a response time of 24 hours (on weekdays) for the instructor to respond to messages sent via the Canvas LMS or email. Students can expect assignments to be graded within 7 days of the assignment's due date. Students have up to 7 days after an assignment is graded to dispute a grade. Once the 7-day window has passed, grades will not be reviewed. To dispute a grade, please speak with the instructor after class or send an email. ***No late work or grade disputes will be accepted during or after the last week of class.***

Grading Standards & Practices (traditional, no curve)

Letter Grade	Points Range		Assignment type	Percent of grade
A	90 – 100%		Assignments	35
B	80 – 89%		Team Projects	55
C	70 – 79%		Participation	10
D	60 – 69%			
F	0 – 59%			

Attendance Policy

The maximum allowable "instances of no participation" is 3. An "instance of no participation" is defined as a missing assignment, a lack of contribution to an in-class discussion, or absence from class. Upon the 4th instance, the student may be withdrawn from the course.

It is your responsibility as a student to attend every class. You are expected ***to stay informed*** about everything discussed during class sessions. If you miss a class, it is still your responsibility to learn and understand the material covered.

Students may be excused from class due to official SCC-sanctioned events, religious observances, medical reasons, or legitimate emergencies. They should inform the instructor of the absence by email as soon as possible, and provide documentation as requested by the instructor.

Assignment types and Expectations

I believe in *fairness* and apply it *consistently* in my classes. *No exceptions will be made for anyone.*

Assignments – This category primarily includes homework but also encompasses in-class assignments and quizzes. Details such as due dates and submission types are available on Canvas Calendar, and it is the student's responsibility to stay informed of these details.

Any submission made during the lecture (except for in-class assignments) will automatically receive a 0%. If you work on assignments during class time (other than in-class assignments), you will receive a 0% for that assignment. Similarly, if you work on assignments for other classes during this class, you will receive a 0% for the assignment due that day.

Team Projects – The course includes three team projects, which together account for half of your grade:

- **Engineering Career Video (15%)**
- **Solar Cell Optimization Report (10%)**
    - **Note: If you fail to submit the Solver and Solar 1 assignments by their respective due dates, you will not be allowed to proceed with the second project and will receive a 0 for that project.**
- **Final: Future Vision Website (25%)**

Teams will typically consist of 3 to 4 students. Your grade will be based partly on the overall team product and partly on your individual contribution. Frequent team meetings will be essential, so please plan accordingly.

No late submissions will be accepted for these projects.

Participation – Your grade in this area is based on your ***contributions to class discussions and attendance,*** not solely on submitting assignments.

Resubmission Policy – If you are given the opportunity to resubmit an assignment, you will have **only one chance** to do so. Use this opportunity wisely to enhance your understanding of the material. You are encouraged to seek guidance from me or consult our dedicated tutor.

Please note that I will not re-grade an assignment more than once.

Reconsideration of Graded Assignments – If your answer is incorrect and the correct solution has already been provided on your graded assignment, please do not resubmit it or request reconsideration. The solution has been shared to support your learning.

Late submission of assignments

No *project submissions* will be accepted late.

Assignment submissions will be accepted up to 3 days late. Any submission received between 1 minute and 3 days late will incur a 30% deduction from its score. Submissions more than 3 days late will not be reviewed and will receive a 0%. Please do not reach out to me after the due date to explain why you did not submit your assignment on time. If you wish to submit late work without receiving a late penalty, you must communicate with me **before the due date** and provide written proof. If approved, the late penalty will be waived. Otherwise, my late submission policy will be enforced.

On days designated for in-class assignments, arriving more than 10 minutes late will result in a 30% late submission penalty for that assignment. ***If you anticipate being late you must email me at least one day in advance with an explanation.*** If approved, you may be allowed to complete the assignment with a group.

This policy ensures fairness to students who arrive on time and are not required to redo their work to accommodate latecomers.

In-Class Assignment Make-Up Procedure:

1- Email the instructor before class to explain your absence.

2- Complete and submit the assignment by the start of the next class day.

3- Any submissions beyond this point will follow the same late submission deductions outlined in the assignment policy.

4- Since the material has already been covered in class, it is the student's responsibility to catch up. I will not re-teach topics in a private session if they have already been covered during class.

Tutoring

It is mandatory to register for the **"SCC Computer Science/Engineering Open Lab" Canvas course**. The registration link is available on Canvas.

This course provides access to our online **Discord** tutoring platform, where you can connect with a dedicated tutor and check their availability for assistance.

Working in Teams and Plagiarism

Working in teams is an essential aspect of both engineering and this course. There are multiple team projects throughout the course (refer to the schedule). Most other assignments, however, will be completed individually.

While you are encouraged to discuss assignments with your classmates to help each other, the work you submit must be your own. Any instance of copying on an assignment will result in a grade of 0 for all students involved. Repeated violations will result in the initiation of the official plagiarism procedures outlined in the student handbook.

All team members are required to respond to any correspondence within **36 hours**. Failure to do so will result in a ***30% penalty on the project***. ***Additionally, if a student does not participate or fulfill their assigned responsibilities within the team, they will receive a 0 for that project***.

Student Behavior

The classroom should be an environment of respect that is conducive to learning for all students present. To help with this:

- No offensive, threatening, or disruptive language or images during class or office hours
- For office hours, prepare questions before coming in and expect to wait if someone else is already speaking

Any egregious violations of these rules, as judged by the instructor, will invoke the following procedure:

- First offense: individual conversation between student and instructor; documentation of incident. Possible reduction of participation points.
- Second offense: meeting between student and dean before being allowed back in the classroom; documentation of incident. Reduction of participation points.
- Third offense: meeting between student and dean; potential suspension; documentation of incident. Reduction of participation points.

Generative Artificial Intelligence (AI) Policy

Generative AI can be defined as “a category of artificial intelligence (AI) algorithms that generate new outputs based on the data they have been trained on. Unlike traditional AI systems that are designed to recognize patterns and make predictions, generative AI creates new content in the form of images, text, audio, and more.” Some examples of generative AI tools include but are not limited to: ChatGPT, Google Bard, Microsoft Copilot, Stable Diffusion, GrammarlyGo, and Adobe Firefly.

In this class, **all the work submitted must be your own original work**. The use of generative AI tools will be considered **academic misconduct** (see Administrative Regulation 2.3.11 1.B(b)) and will be treated as such. If you are unsure if the tool or website you are using is a generative AI tool, please contact the instructor for further clarification before using the tool or website.

Student/Instructor Interaction

In this course, you can expect regular and substantive interaction (RSI) that aligns with Scottsdale Community College’s mission to provide challenging and supportive learning experiences and the US Department of Education’s requirement for regular and substantive interaction (RSI) for online courses. My commitment to your success includes the following:

- Being available during regularly scheduled student support hours as stated in the syllabus.
- Sharing weekly information about the course materials, including key information, explanations, examples, and resources via in-person, recorded, and/or text-based lectures.
- Providing group or individual feedback regularly on assignments.
- Promptly responding to student questions about the course sent via email, MOER messaging, the Canvas inbox, or the engineering discord.
- Posting announcements about the course content and activities updates.
- Monitoring your academic progress and communicating concerns, as needed.

Students are responsible for the information contained in this syllabus, the Syllabus page in your Canvas course and the **College Policies & Student Services** page found in the First Steps module of your Canvas course. Students will be notified by the instructor of any changes in course requirements or policies.

ECE102 Course Schedule — Spring 2025 MW 9:45-11:45 am

Schedule is subject to change at instructor's discretion.

Class #	Date	Before Class	In Class Topics	Assign	Due by (11:59 pm on the day before)
0	Zero Week	Syllabus Overview Online tools	-	**H:** Syllabus Quiz	-
1	1/27	Elon Musk Goal Setting Sherlock Holmes	Syllabus, Goal setting, Time management, Learning strategies	**H:** Time Management	-
2	1/29	Mind mapping Crash Course 1 Study skills	Engineering career, Academic paths	**I:** Engineering career **P:** Engineering Disciplines Showcase **H:** Learning Styles Mind Map	-Syll. Quiz -Time Man.
3	2/3	ThousandEyes Teams Group Decisions	Team Decisions, Lost in the Desert	**I:** Lost in Desert	-Lost in Desert -Mind Map -Eng. Career
4	2/5	Speak so they listen Death by Powerpoint	Presenting your work, Progress Report Meetings	-	Progress Report
5	2/10	Google Study Military Teamwork	Teamwork discussion	**I:** Teamwork Discussion	Teamwork Disc
6	2/12	Confidence Conflict Units of Measure Fahrenheit	Units, Conversions	**I:** Units	-
	2/17*	-	**No class – President Day**	-	-

7	2/19	C.C. Units Dim. Analysis	Dimensional Homogeneity, Equation Editor	**I:** Dim Homogeneity	-Units - Engineering Videos
8	2/24	Excel Beginners Excel_ThingsToKnow.pdf Instr_Examples.xlsx	Excel (intro, cell references)	**I:** First spreadsheet **H:** Simple interest	-Dim. Homog. -Project Evals -Peer Reviews
9	2/26	AND, OR, IF Scatter Plot/Trendline	Excel (logic, scatter plots, best-fit lines)	**H:** NFL standings	-First Spreadsheet -Simple interest
10	3/3	C.C. Correlation C.C. Regression	Regression	**H:** Chromium levels	NFL standings
11	3/5	Taco Party Shopping Carts	Engineering Design Process	**I:** Design Process	Chromium levels
-	**3/10***	-	**No class - Spring Break**	-	-
-	**3/12***	-	**No class - Spring Break**	-	-
12	3/17	Beauty of visualization Weird charts Excel_ChartTypes.pdf	Excel (plot types)	**H:** Crime plots	Design Process
13	3/19	Solver step-by-step Selecting best chart Solver_examples.xlsx	Excel (Solver)	**H:** Solver	Crime plots
14	3/24	Failure & Eng. Culture 6 feet	“A Kind of Magic” Day??	**I/H:** ?	- ? - Solver
15	3/26	TedEd How solar works LearnEng Solar Cells	Solar 1	**H:** Solar 1	

16	3/31	Storytelling w/ data How we got here	Solar 2	**P:** Solar 2	Solar 1
17	4/2	Writing style for eng. Google People Analytics	Written reports; Project time	**I:** Technical reports	-
18	4/7	Draw Toast Elevator Wait Times	PtF – team formulation, identify	**P:** Final	-Technical reports - Solar Report -Team evaluation
19	4/9	Vox Texas Power Avoid Avoiding	PtF – investigate	-	-
20	4/14	-	Progress Report Meetings	-	Progress Report 1
21	4/16	-	Peer review: Problem	-	Peer Review 1
22	4/21	Psychology of P.S. Delta Faucet	PtF – ideate	-	-
23	4/23		PtF – implement	-	-
24	4/28	Vox Highways Scientific Method	Progress Report Meetings	-	Progress Report 2
25	4/30	Grain Bins Figure it Out	Peer review: Top Design	-	Peer Review 2
26	5/5	Michael Arnold Germany Pumps	Project time	-	-
27	5/7	Vox Bailey Bridge College Poverty	Tearful farewell	-	Website; Evaluations

Abbreviations: **H:** homework, **I:** in-class, **P:** project