

ECE102
Fall 2024
14-week



SCOTTSDALE
COMMUNITY COLLEGE

A MARICOPA COMMUNITY COLLEGE

Course Information

Semester & Year:	Fall 2024
Course Title:	Engineering Analysis Tools and Techniques
Course Prefix & Number:	ECE102
Section Number:	12352
Credit Hours:	2
Start Date – End Date:	September 4, 2024 - December 13, 2024
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 9am - 12 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.

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.

Required Course Materials

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

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.

Grading Standards & Practices

Grade Scale (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%		

Assignment types

Assignments – This category includes primarily homework, but also in-class assignments and quizzes. Details such as due date and submission type are available on Canvas—it is the student’s job to pay attention to these details.

Team Projects – Three team projects are part of the course, worth the indicated percentage of your grade:

- Engineering Career Video (15%)
- Solar Cell Optimization Report (10%)
- Final: Future Vision Website (25%)

Team sizes are typically 3 or 4 students. Your grade is partially dependent on the overall team product and partially on your individual contribution. Be prepared to meet often with your team.

Participation – Your grade here is based on your contributions to the class discussions and attendance.

Withdrawn – If your grade falls below 70% at any point, you will be withdrawn from this class without any further notice because I have reached out to you many times before.

Late submission of assignments

No *project submissions* or *participation* submissions will be accepted late.

Assignment submissions will be accepted up to 3 days late. Any submission that is between 1 minute and 3 days late will have 30% deducted from its score. Any submission more than 3 days late will not be looked at and will receive a 0%. Any submission (with the exception of in class assignments) during the lecture will receive a 0%. If you work on your assignment in class (with the exception of in class assignments) you will receive 0% on that assignment.

In-class assignments can be made up by the following procedure:

1. Email the instructor before class explaining the absence
2. Complete and submit the assignment by the start of the next class day
3. Any submissions past this point follow the same deductions described for *assignment* submissions

Working in teams, plagiarism

Working in teams is a vital part of engineering and of this course. There are multiple team projects in this course (see schedule). Most other assignments will be completed individually. You may discuss with classmates to help each other through the assignments, but the work that is submitted must be done by yourself. When copying occurs on an assignment, all students involved receive a 0. Repeated violations will invoke the official plagiarism procedure found in the student handbook. All the team members are responsible for replying to any correspondences they receive within 36 hours. If for any reason a team member ignores the communication, he/she is receiving in regards to the project, that student will be dropped after the second attempt.

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 until 7 days after an assignment is graded to protest a grade (exception: grades posted in the last week of the semester must be protested earlier to beat the deadline for official grade posting). Once those 7 days have passed, the grade will not be reviewed. To protest a grade, speak with the instructor after class or via email.

Attendance Policy

It is your responsibility as a student to attend every class period. You are expected to know the things that are discussed in class; if you miss a day, the material is still your responsibility.

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.

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.

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 work submitted must be your own. 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.

My purpose and expectations

My purpose in being here is to serve you by being a thorough, helpful, and fair instructor, and so provide a solid foundation for further studies. However, the responsibility for grabbing hold of your education lies with you. I expect you to be respectful to me and your classmates and to realize what a gift and responsibility it is to be a student. The more genuine you are, the more you'll learn and the more fun it'll be for all of us. If you have questions/ concerns/struggles with anything, simply ask and you'll find help.

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 — Fall 2024 MW 9:45-11:45 am

Schedule is subject to change at instructor's discretion.

Class #	Date	Before Class	In Class Topics	Assign	Due
0	Zero Week	Syllabus Overview Online tools	-	H: Syllabus Quiz	-
1	9/4	Elon Musk Goal Setting Sherlock Holmes	Syllabus, Goal setting, Time management, Learning strategies	H: Time Management	-
2	9/9	Mind mapping Crash Course 1 Study skills	Engineering career, Academic paths	I: Engineering career P: Career video H: Learning Styles Mind Map	-Syll. Quiz -Time Man.
3	9/11	ThousandEyes Teams Group Decisions	Team Decisions, Lost in the Desert	I: Lost in Desert	-Lost in Desert -Mind Map -Eng. Career
4	9/16	Speak so they listen Death by Powerpoint	Presenting your work, Progress Report Meetings	-	-Progress Report
5	9/18	Google Study Military Teamwork	Teamwork discussion	I: Teamwork Discussion	
6	9/23	Confidence Conflict Units of Measure Fahrenheit	Units, Conversions	I: Units	-Teamwork Disc
7	9/25	C.C. Units Dim. Analysis	Dimensional Homogeneity, Equation Editor	I: Dim Homogeneity	-Units -Career Videos
8	9/30	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	10/2	AND, OR, IF Scatter Plot/Trendline	Excel (logic, scatter plots, best-fit lines)	H: NFL standings	-First Spreadsheet -Simple interest
10	10/7	C.C. Correlation C.C. Regression	Regression	H: Chromium levels	NFL standings
11	10/9	Taco Party Shopping Carts	Engineering Design Process	I: Design Process	Chromium levels
12	10/14	Beauty of visualization Weird charts Excel_ChartTypes.pdf	Excel (plot types)	H: Crime plots	Design Process
13	10/16	Failure & Eng. Culture 6 feet	Social Distance	I/H: Social Distance	-Crime plots -Social Distance
14	10/21	Solver step-by-step Selecting best chart Solver_examples.xlsx	Excel (Solver)	H: Solver	
15	10/23	TedEd How solar works LearnEng Solar Cells	Writing Center; Solar 1	H: Solar 1	Solver
16	10/28	Storytelling w/ data How we got here	Solar 2	P: Solar 2	Solar 1
17	10/30	Writing style for eng. Google People Analytics	Written reports; Project time	H: Writing Center	-
18	11/4	Maurice Ashley	Project time	-	Writing Center
19	11/6	Draw Toast Elevator Wait Times	PtF – team formulation, identify	P: Final	-Solar Report -Team evaluation
20	11/11	Vox Texas Power Avoid Avoiding	PtF – investigate	-	-

21	11/13	-	Progress Report Meetings	-	Progress Report 1
22	11/18	-	Peer review: Problem	-	Peer Review 1
23	11/20	Psychology of P.S. Delta Faucet	PtF – ideate	-	-
24	11/25	Vox Highways Scientific Method	PtF – implement	-	-
25	11/27	-	Progress Report Meetings	-	Progress Report 2
26	12/2	-	Peer review: Top Design	-	Peer Review 2
27	12/4	Grain Bins Figure it Out	Project time	-	-
28	12/9	Michael Arnold Germany Pumps	Project time	-	-
29	12/11	Vox Bailey Bridge College Poverty	Tearful farewell	-	Website Evaluations

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