



ENGR 2304-101CL
Programming for Engineers
Fall 2022
MW 2:00pm – 4:50pm STEAM Building Room 127

Instructor Information: Rebecca Fagan
E-mail: rfagan@com.edu (preferred method of communication)
Office: (409)933-8244

Student hours and location:
Tuesday, Thursday, Friday 9:30am to 12:00pm
Or by appointment
Location: STEAM 325-18

Required:

Textbook

Engineering Computation: An Introduction Using MATLAB and Excel
Joseph Musto and William Howard and Richard Williams
McGraw Hill; 2nd edition (2021) ISBN10: 007338027X

Materials

- Engineer Pad, 5 Squares per Inch, 8.5" x 11", Green
- Scantrons – 882E

Online Resources

COM BrightSpace: <https://de.com.edu/webapps/login/>
Training is required to access. If you have any questions regarding course access or training, please contact the Distance Education department at ext. 8476.

Course Description:

(LECTURE 2, LAB 4). CREDIT 3. ACGM
Programming principles and techniques for matrix and array operations, equation solving, and numeric simulations applied to engineering problems and visualization of engineering information; platforms include spreadsheets, symbolic algebra packages, engineering analysis software, and laboratory control software.

Prerequisites:

MATH 1314 with a grade of "C" or better, Take previously, Required

Calculators: <https://ncees.org/exams/calculator/>

NCEES approved calculators will be used for exams. After your first warning, your exam will be collected and your grade will be a zero if you are caught using a non-approved calculator.

- Casio: All fx-115 and fx-991 models
(Any Casio calculator must have "fx-115" or "fx-991" in its model name.)
- Hewlett Packard: The HP 33s and HP 35s models, but no others
- Texas Instruments: All TI-30X and TI-36X models (Any Texas Instruments calculator must have "TI-30X" or "TI-36X" in its model name.)

Course Requirements:

- **Lectures** – each class will cover textbook material.
- **Homework** – these assignments will be linked to the course material to help reinforce the information covered in lecture.
- **Project** – this will be a design project inclusive of a full formal report.

Determination of Course Grade/Detailed Grading Formula:

- **Attendance** – 10 points per class attended.
- **Homework** – 20 points per assignment for on-time and correct completion due as listed on the syllabus.
- **Project** – 500 points for on-time and correct completion due as listed on the syllabus.

Grading Formula:

Requirements	Total	%
Attendance	300	22%
Homework	460	34%
Project	500	37%

Grading Policy: Letter grades will be based on the following scale:

A	90 - 100
B	80 - 89
C	70 - 79
D	60 - 69
F	Below 60
F _N	F for excessive absences

Project Report:

- Each student is responsible for submitting a project report in his/her own words.
- All reports are to be word processed with 1" margins, 1.5 line spacing, and 11-point font.
- All reports must contain the following sections:
 - ✓ One Cover page – Provide the title of report, Report number, Course number, Department STEAM, College of Mainland and
 - ✓ Introduction – Provide background information regarding the experiment/exercise.
 - ✓ Body – Provide detailed information about the experiment/exercise and the steps performed to reach the desired goal of the experiment/exercise.
 - ✓ Conclusion – Describe the results of the experiment/exercise. Was the desired goal achieved? Explain. What would you change?
 - ✓ Proofread and spell check before submitting.

Late Work, Make-Up, and Extra-Credit Policy:

Any deviations from the policies described below are at the sole discretion of the instructor.

Late Work - Late work will be accepted **ONE WEEK late ONLY** and given half credit:

- Homework

Late Project submittal will **NOT** be accepted.

COM recognizes no excused absences other than those prescribed by law: religious holy days and military service <https://www.com.edu/student-services/student-handbook.html>.

Make-Up:

Should you anticipate an absence, you must contact your instructor by phone, email, or in person **PRIOR** to the absence. Each situation will be evaluated independently. Make-Up policy will be allowed for a death in the family or a documented student illness. You must provide legitimate proof for your excuse.

- **Exams** – There are NO MAKE-UP EXAMS. You may be allowed to replace **ONE** missed exam with **HALF** the value of your **LOWEST** exam grade. Any additional missed exams will be issued a **ZERO**.

Extra-Credit:

During the semester there may be opportunities for extra credit. Students are responsible for submitting any extra credit work by the due date and no late work for extra credit will be accepted.

Attendance Policy:

Students are expected to attend all class sessions as listed on the course calendar. Attendance will be taken at the beginning of each class. Leaving early from class (without approval from the instructor) may result in an absence for that day. IF you do have to miss class, course materials will be posted, but it is your responsibility to obtain any additional notes from a classmate.

Communicating with your instructor:

ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means. Responses can be expected within 24 hours during the week or 48 hours if it is the weekend.

Student Learner Outcomes:

Student Learner Outcomes*	Core Objectives**	Assessed via this Assignment
1. Use matrix and array operations for equation solving.	Teamwork	In Class Tutorials
2. Identify the strengths and weaknesses of the conventional programming languages.	Critical Thinking Skills	Project
3. Use spreadsheets and their built-in features to solve a variety of engineering problems, applying both quantitative and qualitative methodologies.	Personal Responsibility	In Class Tutorials
4. Describe methods for the design of programs that control equipment or analyze data.	Communication Skills	Project

5. Write computer programs to solve engineering problems and perform engineering simulations using common software tools.	Empirical and Quantitative Skills	Homework
6. Graphically present engineering data, results, and conclusions.	Social Responsibility	In Class Tutorials

** <https://reportcenter.highered.texas.gov/training-materials/lower-division-academic-course-guide-spring-21/>

** <http://leaptx.org/coreobjectives/>

Academic Dishonesty:

Any incident of academic policy will be dealt with in accordance with college policy and the Student Handbook. Academic dishonesty – such as cheating on exams is an extremely serious offense and will result in a **grade of zero** on that exam and the student will be referred to the Office of Student Conduct for the appropriate discipline action.

Plagiarism:

Plagiarism is using someone else’s words or ideas and claiming them as your own.

Plagiarism is a very serious offense. Plagiarism includes paraphrasing someone else’s words without giving proper citation, copying directly from a website and pasting it into your paper, using someone else’s words without quotation marks. Any assignment containing any plagiarized material will receive a **grade of zero** and the student will be referred to the Office of Student Conduct for the appropriate discipline action.

Link to resource about avoiding plagiarism:

<https://owl.english.purdue.edu/owl/resource/589/01/>

Student Concerns:

If you have any questions or concerns about any aspect of this course, please contact me using the contact information previously provided. If, after discussing your concern with me, you continue to have questions, please contact Dean of Academic Programs, Dr. Barney at (409)933-8727 or rbarney@com.edu.

Classroom Conduct Policy:

College of the Mainland requires that students enrolled at COM be familiar with the Standards of Student Conduct, which can be found in the on-line Student Handbook

<https://www.com.edu/student-services/student-handbook.html>.

Students should act in a professional manner at all times. Disruptive students will be held accountable according to college policy. Any violations of the Code of Conduct will result in a referral to the Office for student Conduct and may result in dismissal from this class.

Behavioral Expectations:

Each student is entitled to an environment conducive to learning. Any situation that prevents students from learning or the instructor from teaching is considered to be a disruption. Please be respectful of your fellow students and the instructor by adhering to the following:

1. Cell phones can be used sparingly during class, but if the use begins to be a disruption to yourself, other students, or the instructor, you will be asked to put the device away. Certain devices can be used to view content on the internet; however, this is at the discretion of the instructor. Laptops are ONLY permitted during class to take notes. Surfing the internet or checking email from your laptop is not permitted.

During exams, no electronics will be allowed. Items not allowed include, but are not limited to, cell phones, laptops, tablets, ear buds, headphones. If the

student has any of these devices out during an exam, the exam will be taken from the student, and they will receive a zero for that exam.

2. Students can be removed from the class if they are exhibiting disruptive behavior as deemed by the instructor. Repeated incidents will result in automatic withdrawal from the class. Students who display this conduct will be removed from the class and a Conduct Referral Form may be submitted to the Dean of Students.

Course policies are subject to change. It is the student's responsibility to check Brightspace for corrections or updates to the syllabus. Any changes will be posted in Brightspace.

Institutional Policies and Guidelines

Grade Appeal Process: Concerns about the accuracy of grades should first be discussed with the instructor. A request for a change of grade is a formal request and must be made within six months of the grade assignment. Directions for filing an appeal can be found in the student handbook. <https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf. *An appeal will not be considered because of general dissatisfaction with a grade, penalty, or outcome of a course. Disagreement with the instructor's professional judgment of the quality of the student's work and performance is also not an admissible basis for a grade appeal.* https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf

Academic Success & Support Services: College of the Mainland is committed to providing students the necessary support and tools for success in their college careers. Support is offered through our Tutoring Services, Library, Counseling, and through Student Services. Please discuss any concerns with your faculty or an advisor.

ADA Statement: Any student with a documented disability needing academic accommodations is requested to contact Michelle Brezina at 409-933-8124 or mvaldes1@com.edu. The Office of Services for Students with Disabilities is located in the Student Success Center.

Textbook Purchasing Statement: A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

Withdrawal Policy: Students may withdraw from this course for any reason prior to the last eligible day for a "W" grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law. The last date to withdraw from the 1st 8-week session is October 5. **The last date to withdraw from the 16-week session is November 18.** The last date to withdraw for the 2nd 8-week session is December 1.

FN Grading: The FN grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The FN grade may be issued for cases in which the student ceases or fails to attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the FN grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an FN grade.



Early Alert Program: The Student Success Center at College of the Mainland has implemented an Early Alert Program because student success and retention are very important to us. I have been asked to refer students to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If you are referred to the Early Alert Program you will be contacted by someone in the Student Success Center who will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

Resources to Help with Stress:

If you are experiencing stress or anxiety about your daily living needs including food, housing or just feel you could benefit from free resources to help you through a difficult time, please click here <https://www.com.edu/community-resource-center/>. College of the Mainland has partnered with free community resources to help you stay on track with your schoolwork, by addressing life issues that get in the way of doing your best in school. All services are private and confidential. You may also contact the Dean of Students office at deanofstudents@com.edu or communityresources@com.edu.

Fall 2022 Tentative Course Outline:

Class Schedule for ENGR 2301 - M/W - Fall 2022							Update 08/22/22
DATE	DAY	CLASS #	CHAPTER	TOPICS	HOMEWORK		
					Assignment	Due	Comments
08/22	M	1	1	Lecture: Computing Tools	# 1		-
08/24	W	2	2	Lecture: The Excel Interface Tutorial: Entering and Formatting Data With Excel Tutorial: Entering and Formatting Formulas With Excel Tutorial: Using Built-in Functions	# 2	# 1	Show Up to Class having READ Chapter 1 & 2
08/29	M	3	2	Tutorial: Performing Logical Tests Using the IF Statement Tutorial: Using Lookup Tables Tutorial: Interpolating With Excel	# 3	# 2	-
08/31	W	4	3	Lecture: The MATLAB Interface Tutorial: Using the Command Window for Interactive Computation Tutorial: Using MATLAB Script Files Tutorial: Using MATLAB Function Files	# 4	# 3	Show Up to Class having READ Chapter 3
09/05	M	-	-	LABOR DAY - NO CLASS			
09/07	W	5	3	Tutorial: Computing With One-Dimensional Arrays Tutorial: Computing With Two-Dimensional Arrays Tutorial: Saving a MATLAB Session CENSUS DATE	# 5	# 4	-
09/12	M	6	3	Tutorial: Computing With One-Dimensional Arrays Tutorial: Computing With Two-Dimensional Arrays Tutorial: Saving a MATLAB Session	# 6	# 5	-
09/14	W	7	4	Lecture: Flowcharts Tutorial: Loop Commands Tutorial: Logical Branching Statements	# 7	# 6	Show Up to Class having READ Chapter 4
09/19	M	8	4	Tutorial: Combining Loops and Logic	# 8	# 7	-
09/21	W	9	4	Tutorial: Formatting MATLAB Output	# 9	# 8	-
09/26	M	10	5	Lecture: Types of Graphs Lecture: XY Graphs Lecture: Guidelines for Producing Good Graphs 5.2.1 - Tutorial: Plotting in Equations in Excel	# 10	# 9	Show Up to Class having READ Chapter 5
09/28	W	11	5	5.2.3 - Tutorial: Plotting Data and Curve Fitting with Excel 5.4 - Tutorial: Creating Other Types of Graphs With Excel	# 11	# 10	-
10/03	M	12	5	5.2.2 - Tutorial: Plotting in Equations in MATLAB 5.2.4 - Tutorial: Plotting Data and Curve Fitting with MATLAB	# 12	# 11	-
10/05	W	13	-	Project Presentations	-	-	-
10/10	M	14	6	Lecture: Motivation Lecture: Roots of Equations: Theory Tutorial: Solution of General Nonlinear Equations Using MATLAB	# 13	# 12	Show Up to Class having READ Chapter 6
10/12	W	15	6	Tutorial: Solution of Polynomial Equations Using MATLAB	# 14	# 13	-
10/17	M	16	6	Tutorial: Solution of General Nonlinear Equations Using Excel	# 15	# 14	-
10/19	W	17	7	Lecture: Properties of Matrices Tutorial: Matrix Operations Using Excel	# 16	# 15	Show Up to Class having READ Chapter 7
10/24	M	18	7	Tutorial: Matrix Operations Using MATLAB	# 17	# 16	-
10/26	W	19	8	Lecture: Systems of Linear Equations Tutorial: Solutions of Linear Equations Using Excel	# 18	# 17	Show Up to Class having READ Chapter 8
10/31	M	20	8	Tutorial: Solving Nonlinear Simultaneous Equations Using Excel Deadline to submit Fall 2022 Graduation	# 19	# 18	-
11/02	W	21	8	Tutorial: Solutions to Simultaneous Linear Equations Using MATLAB	# 20	# 19	-
11/07	M	22	8	Tutorial: Solving Nonlinear Simultaneous Equations Using MATLAB	# 21	# 20	-
11/09	W	23	9	Lecture: Concepts From Calculus Tutorial: Numerical Integration of Functions	# 22	# 21	Show Up to Class having READ Chapter 9
11/14	M	24	9	Tutorial: Numerical Integration of Measured Data	# 23	# 22	-
11/16	W	25	10	Lecture: Wind Loads on a Low Rise Building for Project Lecture: Engineering Optimization	# 24	# 23	Show Up to Class having READ Chapter 10
11/18	F	-	-	WITHDRAWAL DAY - NO CLASS			
11/21	M	26	10	Lecture: Formulating an Optimization Problem Lecture: Solution of an Optimization Problem	# 25	# 24	-
11/23	W	27	10	Lecture: Solution of an Optimization Problem Tutorial: Solution of an Optimization Problem Using MATLAB, fminsearch and fminband	# 26	# 25	-
11/28	M	28	10	Tutorial: Solution of an Optimization Problem Using Excel, constrained and unconstrained	# 27	# 26	-
11/30	W	29	10	Tutorial: Engineering Application of Linear Constrained Optimization	-	# 27	-
12/05	M	30	-	Project Presentations	-	-	-
12/09	F	-	-	GRADES DUE BY NOON			
Class schedule is subject to change.							