Programming for Engineers: ENGR 2304

LAMAR INSTITUTE OF TECHNOLOGY

INSTRUCTOR CONTACT INFORMATION

Instructor: **Amit Biswas**

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Office Location: 855 E Lavaca St, Beaumont, TX 77701
Office Hours: By appointment

CREDIT

3:3:3 Semester Credit Hours

MODE OF INSTRUCTION

Hybrid (Online and Lab)

PREREQUISITE/CO-REQUISITE:

None

COURSE DESCRIPTION

MATLAB Programming for Engineers introduces to emphasize the proper way to write reliable MALLAB programs in the MATLAB Environment. The methodology encourages students to think about the proper writing code of a program specialty in Mathematical Operation. Math functions provide a range of numerical computation methods for analyzing data, developing algorithms, and creating graphs. Core functions use processor-optimized libraries for fast vector and matrix calculations.

COURSE OBJECTIVES

Upon completion of this course, the student will be able to

1. *Elementary Math Code formula- Arithmetic Operation, Trigonometry, exponentials and logarithmic*
2. *Define the inputs required by the program for Linear Algebra- Linear Equation, Eigenvalues and Singular Values, Matrix Operation*
3. *Describe how to solve several types of systems of linear equations*
4. *Learn to write Programming Language –Scripts, functions and Classes.*
5. *Create functions which accept input and return outputs.*

REQUIRED TEXTBOOK AND MATERIALS

1. Scientific calculator
2. Laptop
3. https://www.mathworks.com/help/matlab/programming-and-data-types.html?s_tid=CRUX_lftnav
4. **zyBook ISBN: 979-8-203-13657-2**

ATTENDANCE POLICY

The campus policy mandates that students attend 80% of their scheduled instructional days. Class attendance is critical for understanding the topics. This will be tracked in Starfish via student access in Blackboard and participation during specified meeting times. Excessive unexplained absences will result in a ten-point penalty from the final semester grade (at the discretion of the instructor).

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the Academic Calendar. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Homework	20%
Assignments	20%
Quiz:	20%
Exam:	40%

GRADE SCALE

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- 0-59 F

LIT does not use +/- grading scales.

STUDENT EXPECTED REQUIREMENT

For every hour in class (or unit of credit) students should expect to spend at least two to three hours per week studying and completing assignments. For 3 credit hour class students should prepare to allocate approximately six to nine hours per week outside of class in a 16 week session or approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary
action. Students need to familiarize themselves with the institution's Academic
Dishonesty Policy available in the Student Catalog & Handbook at
http://catalog.lit.edu/index.php

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at https://lit.edu/online-learning/online-learning-minimum-computer-requirements. A functional broadband internet connection, such as DSL, cable, or Wi-Fi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the

Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the LIT Catalog and Student Handbook. The LIT Catalog and Student Handbook may be accessed at www.lit.edu. Please note that the online version of the LIT Catalog and Student Handbook supersedes all other versions of the same document.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

COURSE ASSESSMENT

Quiz: A quiz will be given every other week. The duration of the quizzes will be 15 to 20 minutes. We will continue the class sessions after the quizzes. It is to make sure that the students are students are studying the class materials on a regular basis.

Homework: Students will regularly receive homework assignments. These assignments will be graded. The purpose of the homework is to support the students' learning process.

Extra Credits: Extra credit opportunities will be announced during class lectures. The extra credits will be reflected on students overall grade points at the end of the semester.

Exams: Instructions and dates will be announced at least one week in advance.

Week	Topic	Reference
Week 1	MATLAB Onramp	https://matlabacademy.mathworks.com/details/matlab-onramp/gettingstarted
Week 2	MATLAB Onramp	https://matlabacademy.mathworks.com/details/matlab-onramp/gettingstarted
Week 3	Linear Equation Plot	https://www.mathworks.com/help/matlab/linear-algebra.html
Week 4	Eigenvalues and Singular Values	https://www.mathworks.com/help/matlab/linear-algebra.html
Week 5	Trigonometry, sine, cosine and related functions in MATLAB	https://www.mathworks.com/help/matlab/trigonometry.html
Week 6	Exponents and Logarithms- Exponential, logarithm, power and root function, Matrix	https://www.mathworks.com/help/matlab/exponents-and-logarithms.html
Week 7,8	Random Numbers within a Specific Range- Examples and Applications	https://www.mathworks.com/help/matlab/linear-algebra.html?s_tid=CRUX_lftnav

Week	Topic	Reference
Week 9,10	Solving ODE equation and ODE 45 equation	https://www.mathworks.com/help/matlab/ordinary-differential-equations.html?s_tid=CRUX_lftnav
Week 11,12	Node Voltage Analysis	https://www.mathworks.com/help/matlab/graphics.html
Week 13	Compute Series, Parallel, combined circuit	
Week 14, 15	Node Voltage Analysis by using MATLAB	
Week 16	Exam Lab Test	

ADDITIONAL COURSE POLICIES/INFORMATION

1. Any assignment that Blackboard considers late will be manually graded with a deduction of 20 points.

2. The Final Exam cannot be late for ANY reason. The semester ends when the Final Exam is due.

3. Changes will be made to the calendar's topics and assignments because of any unanticipated circumstances.

SYLLABUS SCHEDULE

The schedule below is the tentative semester schedule which is subject to revision.

Notes:

This schedule is tentative and subject to change