SYLLABUS

Course Code	*Course Num.*	*Course Name*	*Credit Hours*	*Lec.*	*Lab.*	*Tut.*	*Private study*	*Pre-requisites*	*Course Level*	*Teaching Language*
MAT	**251**	**Math Software**	**2**	**0**	**4**	**0**	**2**	**MAT 101**	**3**[1]	**English**

A. Course Description

This course introduces the basic skills in mathematical programming languages such as Matlab without attempting deep coverage.

B. Course Outcomes

At the end of this course the student will be able to:

- Interact with a computer.
- Be familiar with the basic operations of the MATLAB language.
- Create arrays and perform Matrix operations in MATLAB.
- Represent and evaluate functions in MATLAB.
- Use built-in commands and functions in MATLAB.
- Write simple script files and function files in MATLAB.
- Handle graphics and features of 2-D and 3-D plotting.
- Be familiar with basics on M-file programming.
- Connect MATLAB to linear algebra, calculus and other mathematical oriented fields.
- Develop abstract and critical reasoning by seeing some techniques on programming.

C. References:

Required Textbook

Introduction to MATLAB, Delores Etter, Pearson, 2nd Edition, 2010.

Other references:

- ***MATLAB: An Introduction with Applications,*** **3rd Edition, Amos Gilat, The Ohio State University, 2008.**
- ***An Introduction to Matlab,*** **v. 2.3,** David F. Griffiths. http://www.mathworks.com

Course Website: Google Classroom Webpage: http://www.imamm.org

[1] *B.Sc. in Applied Mathematics and Physics.*

D. Topics Outline

1. **Starting with MATLAB:** Introduction to the Software and Computer, MATLAB Windows, **Help** and **Lookfor** Commands, Arithmetic Operations, Display Formats, Built-In Functions, Variables Assignment, Elementary Built-In Functions, Command Line Editing.
2. **Arrays:** Creating Arrays (Vectors, Matrices), Linspace Command, Some Major Matrices, Operators, Matrix Operations in MATLAB, Array Addressing, Adding And Deleting Elements, Strings.
3. **Other Operators:** Operator Precedence, Relational Operations, Logical Operations, **All** and **Any** Commands, **Find** Command, **Sort** Command, **Max** and **Min** Command.
4. **2D And 3D Graphs: Plot** And **Ezplot** Command, **Fplot** Command, Multigraphs Plots, Others Plot Commands, Axis And Graphic Handling, Layout a Figure, 3D Line Plot, Mesh and Surface Plots, View Command.
5. **Script Files:** Creating and Saving a File, **Disp** and **Fprintf** Commands, Loading a File, Search Path, Defining Functions, Structure of a Function File, **Inline** Function, **Feval** Command, Local and Global Variables.
6. **Programming**: If-Else Structure, For and Whileloops, Break and Continue Commands, Switch-Case Statement.
7. **Symbolic Toolbox:** Symbolic Object and Expressions, Algebraic Expression Manipulation, Factorization, Simplification, Solving Equations.

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.
- **Midterm 2:** 11th or 12th week.
- **Quizzes & Homework:** During the semester.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Lab Exam 1: 20 %	**Lab Exam 2:** 20 %	**Final Exam:** 40 %
4 Lab Reports, Attendance & Participation: 20 %		

The grading distribution:

A$^+$	A	B$^+$	B	C$^+$	C	D$^+$	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

G. Student Workload:

#	Teaching/learning activities	Contact Hours	Frequency	Total Contact hours	Self-study hours	Total self-study hours	Student Learning Time
1	Lecture	0	0	0	0	0	0
2	Tutorial	0	0	0	0	0	0
3	Lab\Practical	4	15	60	1.5	22.5	82.5
4	Homework	0	0	0	0	0	0
5	Quiz	0	0	0	0	0	0
6	Test (Midterm)	1	2	2	1	2	4
7	Final Exam	2	1	2	5	5	7
Total				**64**		**29.5**	**93.5**

Independent self-study = 29.5/15 ≅ 2 hrs per week

H. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams
goo.gl/ykm7t3