



Course Specification

— (Postgraduate)

Course Title: Mathematical Programing
Course Code: MATH669
Program: Master Program in Mathematics
Department: Mathematics
College: Science
Institution: University of Tabuk, KSA
Version: 2
Last Revision Date: 1/12/1443 H



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A. General information about the course:

Course Identification

1. Credit hours: 3 H

2. Course type

a. University College Department Track Others

b. Required Elective

3. Level/year at which this course is offered:

Level-2 or higher

4. Course general Description

This course provides an advanced Mathematical software packages such as Matlab, Mable and Mathematica which are advanced and useful for mathematics and various fields of science.

5. Pre-requirements for this course (if any): None

6. Co- requirements for this course (if any): None

7. Course Main Objective(s)

1. Improving the programming skills of the students to handle mathematical sciences problems.
2. Training on variant software's to solve real problems related to mathematical and various sciences.
3. Modeling real science problems and build algorithms to solve it by mathematical software.

1. Teaching mode

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	45	100 %
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4.	Distance learning		

2. Contact Hours

No	Activity	Contact Hours
1.	Lectures	3 H /week
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	



5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding The students will be able to:			
1.1	Demonstrate various ideas and advanced concepts in solving Mathematics programming.	K1	Lectures, Group works, Presentations, discussion, Seminar, Case study, problem solving session.	Exams, Quizzes, Research project, presentation, interactive discussion and participation, Surveys.
1.2	Describe and Recognize the utilization of mathematical packages in solving problems.	K2		
2.0	Skills The students will be able to:			
2.1	Apply a syntax of built-in functions in various fields of science using mathematical software.	S1	Group works, Presentations, discussion, Seminar, problem solving session	Exams, Quizzes, Home works, Assignments, Research project, presentation, interactive discussion and participation, Surveys.
2.2	Solve and analyze advanced problems using mathematical packages .	S2		
3.0	Values, autonomy, and responsibility The students will be able to:			
3.1	Demonstrate self-learning during work individually or in group research	V2	Lectures, Group works, Presentations, Classroom discussion, Seminar, Case study, problem solving session	Research project, Home works, Assignments, presentation, interactive discussion and participation, Surveys.



C. Course Content

No	List of Topics	Contact Hours
1	Advanced Principles of Mathematical Analysis and linear algebra.	3
2	Deep for Graphics, Function Plotting, Parametric Plots.	3
3	Deep for Graphics, Function Plotting, Parametric Plots.	3
4	User Function by using Module with Applications.	3
5	User Function by using Module with Applications.	3
6	Obtaining Functions for Computational Problems in Mathematics.	3
7	Mid-Exam #	---
7	A Package System For Modelling	3
8	Deep Complex Data Structures and Mathematical Objects.	3
9	Deep Complex Data Structures and Mathematical Objects.	3
10	Deep Data Structures for Executing Complex Matrix Computations.	3
11	Deep Data Structures for Executing Complex Matrix Computations.	3
12	Mathematical Operations and Exploratory Data Analysis .	3
13	Advanced Loops Functions and Conditional Statements.	3
14	Advanced Loops Functions and Conditional Statements.	3
15	Presenting the results of Mathematical Analysis	3
16+17	Revision & Final Exam	
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Home works and Assignments	Weekly basis	20%
2.	Mid-term exam	7th week	25%
3.	Presentation and discussion	During the Semester	15%
4.	Final Exam	At End of Semester	40 %

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)





E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	1. Mikhailov, E. E. (2018). Programming with MATLAB for Scientists: A Beginner's Introduction. United Kingdom: CRC Press. 3. HECK, A. (2012). Introduction to Maple. Germany: Springer New York.
Supportive References	Constantin Volosencu(2020) , MATLAB Applications in Engineering, IntechOpen.
Electronic Materials	Saudi Digital Library
Other Learning Materials	None

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture Room with capacity of 30 students and equipped with White Board, Library Computer laboratory including mathematical packages.
Technology equipment (projector, smart board, software)	Overhead projector and internet connection.
Other equipment (depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct and Indirect
Effectiveness of students assessment	Teacher	Direct
Quality of learning resources	Students	Indirect
The extent to which CLOs have been achieved	Teacher, Quality Committee	Direct and Indirect
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods(Direct, Indirect)

G. Specification Approval Data

Council / Committee	Approval by the Department Council
Reference No.	DEPARTMENT COUNCIL NO (26)





Date

11/9/1444 H

