Course Specification
━ (Postgraduate)

Course Title:	Mathematical programming
Course Code:	**202656-3**
Program:	Master of applied mathematics
Department:	Mathematics and statistics
College:	Science
Institution:	Taif university
Version:	*Course Specification Version Number*
Last Revision Date:	*Pick Revision Date.*

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3 hours)

2. Course type

A.	□University	□College	□Department	☒ Track
B.	□Required		☒ Elective	

3. Level/year at which this course is offered: (3rd level)

4. Course general Description:

Introduction to Programming. The basics of programming. Programming applications using software package: the beginning of the work using software package. Vectors - functions and matrices. Control tools. Applications in mathematics.

5. Pre-requirements for this course (if any):

6. Pre-requirements for this course (if any):

7. Course Main Objective(s):

1. Introduce to Programming
2. Apply the basics of programming.
3. practice programming applications using software package
4. Work using software package.
5. Use vectors - functions and matrices.
6. Study control tools.
7. Study applications in mathematics.

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	%100
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		

No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	0
2.	**Laboratory/Studio**	45
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)......**	0
	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**			
1.1	**Apply** appropriate mathematical and statistical theories, models, and tools in solving various problems and applications using software package.	**S1**	Laboratory	- Quizes - Exams - Assignments
1.2	**Demonstrate** understanding the important mathematical and statistical concepts, principles, theorems, formulas, computational techniques in programming applications using software package.	**S5**	Laboratory	- Quizes - Exams - Assignments

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
...				
2.0	**Skills**			
2.1	**Apply** appropriate mathematical and statistical theories, models, and tools in solving various problems and applications using software package	**S1**	Laboratory	- Quizes - Exams - Assignments
2.2	**Demonstrate** understanding the important mathematical and statistical concepts, principles, theorems, formulas, computational techniques in programming applications using MATLAB.	**S5**	Laboratory	- Quizes - Exams - Assignments
...				
3.0	**Values, autonomy, and responsibility**			
3.1	**Participate** effectively within groups and independently.	**V1**	Projects.	Through the oral presentation of the projects.
3.2	**Give** responsibility for learning importance and continuing personal and professional development.	**V2**	Projects.	Through the oral presentation of the projects.
...				

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduce to Programming	**5**
2.	Basics of programming.	**5**
3.	Programming applications using software package	**5**

4.	Vectors - functions and matrices using software package	**5**
5.	Control tools using software package	**5**
6.	Applying the basics of programming using software package	**10**
7.	Applications in mathematics using software package	**10**
Total		**45**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Quizzes**	**Continues**	5 %
2.	**Homeworks**	**Continues**	5 %
3.	**Mid term exam**	8th -9th	20%
4.	**Final exam**	15th	70%

*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	Stephen J. Chapman, BAE Systems, MATLAB Programming with Applications for Engineers, Cengage Learning, 2013.
Supportive References	https://au.mathworks.com/academia/books.
Electronic Materials	https://au.mathworks.com/academia/books.
Other Learning Materials	https://au.mathworks.com/academia/books.

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Computer laboratory.
Technology equipment (Projector, smart board, software)	Matlap software.
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	Indirect

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of students assessment	**Students**	Indirect
Quality of learning resources	**Students**	Indirect
The extent to which CLOs have been achieved	**Peer reviewer**	Direct
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department of Mathematics and Statistics
REFERENCE NO.	
DATE	