2023
TPG-153

Course Specification
(Postgraduate)

Course Title	**Mathematical programming**
Course Code:	**202615-3**
Program:	**Master of Pure Mathematics**
Department:	**Mathematics and Statistics**
College:	**Science**
Institution:	**Taif university**
Version:	1
Last Revision Date:	**20/10/2023**

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (3)				
2. Course type				
A.	☐University	☐College	☐Department	☐Track
B.	☒Required		☐ Elective	
3. Level/year at which this course is offered: Level 1/First Year				
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)**:**				
None				
6. Pre-requirements for this course (if any)**:**				
None				
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	√	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

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

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)……**	NA
	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	**Recognize** fundamentals of programming applications using software package.	K1	Lectures, group discussion `	Exams, Quizzes, Assignments
1.2	**Describe** problems relating to the basic concepts in various fields of	K3	Lectures, group discussion	Exams, Quizzes, Assignments
2.0	**Skills**			
2.1	**Apply** appropriate mathematical and statistical theories, models, and tools in solving various problems and applications using software package.	S1	Lectures, group discussion	Exams, Quizzes, Assignments, report
2.2	**Participate** effectively within groups and independently.	S5	Lectures, group discussion	Exams, Quizzes, Assignments, report
3.0	**Values, autonomy, and responsibility**			
3.1	**Participate** effectively within groups and independently	V1	Lectures, group discussion	Exams, Quizzes, Assignments, report
3.2	**Give** responsibility for learning importance and continuing personal and professional development.	V2	Lectures, group discussion	Exams, Quizzes, Assignments, report

C. Course Content:

No	List of Topics	Contact Hours

1.	Introduce to Programming	6
2.	Basics of programming.	9
3.	Programming applications using software package	6
4.	Vectors - functions and matrices using software package	6
5.	Control tools using software package	6
6.	Applying the basics of programming using software package	6
7.	Applications in mathematics using software package	6
Total		**45**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	**Quizzes and HomeWorks**	**Continues**	**10 %**
2.	**Midterm exam**	**8th -9th**	**20 %**
3.	**Final exam**	**16th**	**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	**None**

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Classrooms**

Items	Resources
Technology equipment (Projector, smart board, software)	Data show, Blackboard, Maple and MATLAB software
Other equipment (Depending on the nature of the specialty)	Wi-Fi internet connections

F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	**Indirect**
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.	**11**
DATE	17-3-1443 H

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