جامعة المجمعة
Majmaah University

Course Specifications

Institution:	**College of Education in Zulfi**
Academic Department :	**Physics Department**
Programme :	Bachelor of Education in Physics(B. Ed in Physics)
Course :	Computational Physics1
Course Coordinator :	Dr. Fatema Alzahraa M. Nabieh
Programme Coordinator :	Dr. Fatema Alzahraa M. Nabieh
Course Specification Approved Date :	1/ 1 / 1438 H

A. Course Identification and General Information

1 - Course title :	computational physics1 **Course Code:** PHYS411
2. Credit hours :	3 C.H.(2 lecture + 2 experimental)
3 - Program(s) in which the course is offered:	B. Ed in Physics
4 – Course Language :	Arabic Language.
5 - Name of faculty member studying the course:	Dr. Fatema Alzahraa M. Nabieh
6 - Level/year at which this course is offered :	7th level.
7 - Pre-requisites for this course (if any) : • PHYS321	
8 - Co-requisites for this course (if any) : • PHYS421	
9 - Location if not on main campus : (-)	

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**80 %**
B - Blended (traditional and online)	-	What percentage?	--- %
D - e-learning	√	What percentage?	20 %
E - Correspondence	-	What percentage?	--- %
F - Other	-	What percentage?	--- %

Comments :
The students using the computer program (matlab).

B Objectives

What is the main purpose for this course?
1. Understand the basic concepts of computers science and programmers language e.g., C language, other **programming languages** and using matlab program.
2. Acquire the necessary skills (e.g computational and numerical skills) to solve systems problems and gain deeper understanding of the concepts of physics.
3. Using matlab program in solving problems in physics applications in different branches.

Briefly describe any plans for developing and improving the course that are being implemented :

- Discussion with staff members.
- Using E-Learning.
- Using presentations and demo files.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to computer science and to computational physics in our life.	1	2
Introduction to programming languages (C language and matlab program).	2	4
Installation of matlab program and program interface.	2	4
Using matlab program in mathematical calculations.	2	2
Midterm exam and its discussion.	1	2
Using matlab program in plotting, fitting data.	2	4
Instruction of mathematical functions by matlab and its application in physics.	4	8
Revision and Responding to inquiries.	1	2
computer laboratory		
Hard and soft ware of computer.	1	2
Installation of matlab program.	1	2
make small programs using matlab.	5	10
Using matlab in physics and mathematical applications.	6	12
revision	1	2

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total

Contact Hours	**30**	-	-	**28**	-	58
Credit	**30**	-	-	**14**	-	44

3. Additional private study/learning hours expected for students per week.

A round 3 : 5 training hours in the home to solving problems and on the training on the program.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Rename the most important definitions and concepts of computer hardware and software and basic concepts of programming language.	Lectures – tutorials – discussion-brain stormy.	• Homework. • Group Discussion • Mid-term exam • Final Exam
1.2	List the basic commands of matlab.		
1.3	List some of physical applications can using matlab.		
1.4	Recognize the basics of matlab program.		
2.0	**Cognitive Skills**		
2.1	Compared between software, hardware, programming language, matlab program.	Lectures – tutorials – discussion-brain stormy. Commands running on computer.	• Homework. • Group Discussion • Mid-term exam • Practical Exam • Final Exam
2.2	**Setup of matlab program in PC.**		
2.3	Develop lines of argument and appropriate judgments in accordance with handling computational physics.		
2.4	Using mathematical operations in matlab.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Engage in teamwork and manage time effectively.	• Encourage students	• Showing students
3.2	Respect community ethics traditions and moral values		

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
3.3	Identify his/her rights and responsibilities as a member of a research / teaching team and as a member of the scientific community at large.	to help each other • Group presentation • Group assignment.	activities in class. • Work in a team.
4.0	**Communication, Information Technology, Numerical**		
4.1	Use information, communication technology and numerical technology effectively.	Encourage students to use program soft wear and internet.	• Showing students activities in class. practical exam.
4.2	Using technology (ex. D2L) in effective communications.		
4.3	using computer professionally in programming language.		
5.0	**Psychomotor**		
	Not applicable		

5. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment task	Week Due	Proportion of Total Assessment
1	attendance	within the semester	5 %
2	Homework, Quizzes, Discussions, cooperation, Teamwork.		15 %
3	Mid-term Exam	8	20 %
4	Final Theoretical Exam	16	60 %

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

Two office hour per week

E. Learning Resources

1. List Required Textbooks :
• Lecture notes prepared by academic staff member .

2. List Essential References Materials :
• Introduction to MATLAB (By Adam Inglis, EngPhys02).
• INTRODUCTIONTOMATLAB, RossL.Spencer and Michael Ware Department of Physics and Astronomy.

3. List Recommended Textbooks and Reference Material :

4. List Electronic Materials :-

5. Other learning material
Web sites and electronic materials are available with the lecturer
• **http://www.mathworks.com**/

F. Facilities Required

1. Accommodation
• Lecture room, a smart board to write on and computer
2. Computing resources
• Computer Lab. and internet lab if available
3. Other resources
• Library of faculty or department , internet connection

G   Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:
Student evaluation manually organized by the quality center of University
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :
3 Processes for Improvement of Teaching :
1. Course report.
2. Program report.
4. Processes for Verifying Standards of Student Achievement
• **Internal revision by staff members.**
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :
1- Course Report
2- Exam report
3- Improvement plan
4- comparison between Program ILO's with course ILO's
5- Discussion with staff members.

Course Specification Approved
Department Official Meeting No (…..) Date … / …. / ….. *H*

Course's Coordinator	**Department Head**
Name : Dr.Fatema Alzahraa	*Name :* Dr.Fatema Alzahraa
Signature :	*Signature* ....
Date : …./ … / …… H	*Date :* …./ … / …… H