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 :	Mathematical Physics 3
Course Coordinator :	Dr. Fatema Alzahraa M. Nabieh
Programme Coordinator :	Dr. Fatema Alzahraa M.
Course Specification Approved Date :	1/ 1 / 1438 H

A. Course Identification and General Information

1 - Course title :	Mathematical Physics 3	Course Code:	PHYS221
2. Credit hours :	(3 C.H.)		
3 - Program(s) in which the course is offered:		B. Ed in Physics	
4 – Course Language :	Arabic Language.		
5 - Name of faculty member responsible for the course:		Dr. Fatema Alzahraa M. Nabieh	
6 - Level/year at which this course is offered :		4th level.	

7 - Pre-requisites for this course (if any) :
- **PHYS212**

8 - Co-requisites for this course (if any) : PHYS321

9 - Location if not on main campus **:**
(-)

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**90 %**
B - Blended (traditional and online)	-	What percentage?	--- %
D - e-learning	√	What percentage?	10 %
E - Correspondence	-	What percentage?	--- %
F - Other	-	What percentage?	--- %

Comments :
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B Objectives

What is the main purpose for this course?

1. Have a good basic knowledge of differential equations and its solutions methods.

2. Have a good basic knowledge of special functions and its properties.

3. Apply Frobenius method for solving 2nd order DE.

Briefly describe any plans for developing and improving the course that are being implemented :
Discussion with staff members, using E-Learning.

C. Course Description
1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Introduction to Differential Equations(DE) and its classification.	1	2
Solution of Differential Equations (DE) by using several methods. **Variable separation/ homogenous functions and DE. /assumptions way/ exact and non exact DE. /linear equations/ Bernoulli equations.**	6	12
Midterm exam and its discussion.	1	2
Physical applications using DE.	3	6
Introduction to special functions.	1	2
Gamma and Beta functions and its properties.	1	2
Frobenius method**.**	1	2
Revision and Responding to inquiries.	1	2
Tutorials		
Solving problems on classification of Differential Equations (DE).	1	2
Solving problems on Differential Equations (DE) by using several methods.	6	12
Solving problems on physical applications.	3	6
Solving problems on special functions.	1	2
Solving problems on Gamma and Beta functions and its properties.	1	2

Solving problems on Frobenius **method.**		1	2
Revision and Responding to inquiries.		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 2 :4 training hours in the home to solving problems .

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 special function and differential equation.	lectures – tutorials – discussion- brain stormy.	• Homework. • Group Discussion • Mid-term exam • Practical Exam • Final Exam
1.2	Defined special functions and the properties of Gamma and Beta functions.		
1.3	Recognize the Frobenius method in solving DE.		
2.0	**Cognitive Skills**		
2.1	Classify DE by several ways.	lectures – tutorials – discussion-	• Homework. • Group Discussion
2.2	Using a several methods in solving DE.		
2.3	Apply different DE methods in physical problems.		

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
2.4	Solving problems on Gamma and Beta.	brain stormy.	• Mid-term exam • Practical Exam • Final Exam
2.5	Solving DE by using Ferbinous Method.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Engage in teamwork and manage time effectively.	• Encourage students • to help each other • Group presentation • Group assignment.	• Showing students activities in class. • Work in a team.
3.2	Respect community ethics traditions and moral values		
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.		
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.
4.2	Using computers in uploading by using D2L system.		
5.0	**Psychomotor**		
	Not applicable		

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

	Assessment task	Week Due	Proportion of Total Assessment
1	Mid-term Exam	8	20
2	Discussions, Team Group.	Within the semester	10
3	Attendance/ Quizzes/ Homework		5/ 10/ 5
4	Final Theoretical Exam	16	50

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 hours per week

E. Learning Resources

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

2. List Essential References Materials :
- **Dr. R. Ibrahim Elkhatib," introduction to differential equations", Dar El Massira, 2012.**
- **Anton, Calculus. 6th edition, Wiley(2006).**
- **Smith Minton, Calculus, early transcendental functions, McGraw-Hill int**

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

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 , Wi-Fi 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 academic staff.**

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 (2) Date 1 / 1 / 1438 *H*

Course's Coordinator	Department Head
Name : Dr.Fatema Alzahraa M.	*Name :* Dr.Fatema Alzahraa M.
Signature :	*Signature :* ....
Date : 3/ 12 / 1437 *H*	*Date :* 3/12/1437 *H*