



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 2
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 :	Mathematical Physics 2	Course Code:	PHYS212
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 :	3 ^{ed} level.		
7 - Pre-requisites for this course (if any) :	<ul style="list-style-type: none"> • PHYS121 		
8 - Co-requisites for this course (if any) :	<ul style="list-style-type: none"> • PHYS221 		
9 - Location if not on main campus :	(-)		
10 - Mode of Instruction (mark all that apply)			
A - Traditional classroom	<input checked="" type="checkbox"/>	What percentage?	90 %
B - Blended (traditional and online)	<input type="checkbox"/>	What percentage?	--- %
D - e-learning	<input checked="" type="checkbox"/>	What percentage?	10 %
E - Correspondence	<input type="checkbox"/>	What percentage?	--- %
F - Other	<input type="checkbox"/>	What percentage?	-- %
Comments :		

B Objectives

<p>What is the main purpose for this course?</p> <ol style="list-style-type: none"> 1. Have a good basic knowledge of structures and functional aspects of complex variables. 2. Apply knowledge complex functions in other branches of physics. 3. An introduction to algebra of sequences and series. <p>Briefly describe any plans for developing and improving the course that are being implemented :</p>





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 complex number(s addition – subtraction- multiplications).	2	4
De-Moivre Theory – Roots of complex numbers.	3	6
Complex functions, complex variables, find $f(z)=u(x,y)+i v(x,y)$	2	4
Midterm exam and its discussion.	1	2
differentiation of complex functions – Cauchy Riemann relations.	2	4
integral of complex functions, useful physical applications	2	4
sequences and its applications	1	2
series and its applications	1	2
revision	1	2
Tutorials		
Solving problems on complex number(s addition – subtraction- multiplications).	2	4
Solving problems on De-Moivre Theory – Roots of complex numbers.	3	6
Solving problems on Complex functions, complex variables, differentiation of complex functions – Cauchy Riemann relations.	2	6
Solving a problems on integral of complex functions	2	4
Solving problems on physical applications and compared between them.	1	2
solve a problems on sequences and its applications	1	2
solve a problems on series and its applications	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	Identify the most important definitions and concepts of compound numbers / De-Moivre theory.	lectures – tutorials – discussion- brain stormy.	<ul style="list-style-type: none"> • Homework. • Group Discussion • Mid-term exam • Practical Exam • Final Exam
1.2	Define sequences and series.		
1.3	Recall expression of De-Moivre theory and Cauchy Riemann relations .		
1.4	Recognize the concepts of complex functions and their properties- analytical- harmonic.		
2.0	Cognitive Skills		
2.1	Solving problems on complex number(s addition – subtraction- multiplications).	lectures – tutorials – discussion- brain stormy.	<ul style="list-style-type: none"> • Homework. • Group Discussion • Mid-term exam • Practical Exam • Final Exam
2.2	Apply / De-Moivre theory/ complex roots relations.		
2.3	Simplify complex functions on $f(z) = u(x,y)+i v(x,y)$		
2.4	Differentiate the complex functions.		
2.5	Integrate the complex functions.		





	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
2.6	classify several types on sequences and series		
3.0	Interpersonal Skills & Responsibility		
3.1	Engage in teamwork and manage time effectively.	<ul style="list-style-type: none"> • 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 on uploading homework by 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 hour per week





E. Learning Resources

1. List Required Textbooks : <ul style="list-style-type: none">Lecture notes prepared by academic staff member .
2. List Essential References Materials : <ol style="list-style-type: none">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 <p>Web sites and electronic materials are available with the lecturer</p> <ul style="list-style-type: none">https://www.khanacademy.org/math/precalculus/imaginary-and-complex-numbers.

F. Facilities Required

1. Accommodation <ul style="list-style-type: none">Lecture room, a smart board to write on and computer
2. Computing resources <ul style="list-style-type: none">Computer Lab. and internet lab if available
3. Other resources <ul style="list-style-type: none">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: <p>Student evaluation manually organized by the quality center of University</p>
2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor : <p>Internal revision by academic staff members.</p>
3 Processes for Improvement of Teaching : <ol style="list-style-type: none">Course report.Program report.
4. Processes for Verifying Standards of Student Achievement <p>-</p>
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement : <ol style="list-style-type: none">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

Name : Dr.Fatema Alzahraa.
Signature
:
Date : 3/12/1437 H

Department Head

Name : .Fatema Alzahraa M.
Signature :
Date : 3/12/1437 H

