



University of Management and Technology

School of Science and Technology

Department of Physics

Course Code: PH312

Course Title: Mathematical Methods of Physics-II

Program: BS (PHY)

Course Outline (Spring Semester 2021)

Schedule	5:00-6:15	Pre-requisite	Mathematical Methods of Physics-I
Course Coordinator	Hafiz Arslan Hashim	Contact	arslan.hashim@umt.edu.pk
Course Description	1-Complex Analysis 2-Tensor Analysis 3-Group Theory		
Expected Outcomes	At the completion of the course students will be able to make a basic understanding of: 1. Complex numbers and functions appear in Physics 2. Tensor Analysis (applied to differential equations important in physics) 3. Group Theory		
Text Book	1. Adv. Engineering Mathematics by Dennis Zill 5 th Ed. 2. Mathematical methods for physicists, sixth edition, by George B. Arfken, Hans J. Weber. Elsevier academic press, 2005. 3. Mathematical Physics by Eugene Butkov, Addison-Wesley Publishing Company, London, 1973.		
Reference Book:	1. Mathematical Methods in the Physical Sciences, 3 rd edition by Mary L. Boas, Kaye Pace, 2006. 2. Advanced Engineering Mathematics, Ninth edition, Erwin Kreyszig, John Wiley and Sons INC, 2006		
Assignments	Problems will be assigned at regular intervals as an assignment.	Quizzes	All quizzes will be announced well before time. No make-ups will be offered for missed quizzes
Mid Term Examination	A 60-minutes exam will cover all the material covered during the first half of the semester.	Final Examination	A 120-minutes exam will cover all the material covered during the semester.
Attendance Policy	Students missing more than 20% of the lectures will receive an "SA" grade in the course and will not be allowed to take final exam.		



Department of Physics

Mathematical Methods of Physics-II (PH312)

Lecture Plan (Spring 2021)

Week	Lecture #	TOPICS	Book
1.	1 2	Functions of a complex variable	Zill
2.	1 2	Functions of a complex variable	Zill
3.	1 2	Integration in the complex plane	Zill
4.	1 2	Integration in the complex plane	Zill
5.	1 2	Series and Residue	Zill
6.	1 2	Series and Residue	Zill
7.	1 2	Curvilinear coordinates	Arfken
8.	1 2	Tensor Analysis and Differential Forms	Arfken
9.	1 2	Tensor Analysis and Differential Forms	Arfken
10.	1 2	Tensor Analysis and Differential Forms	Arfken
11.	1 2	Group Theory	Arfken
12.	1 2	Group Theory	Arfken
13.	1 2	Group Theory	Arfken
14.	1 2	Group Theory	Arfken
15.	1 2	Group Theory	Arfken