German Jordanian University

School of Basic Sciences and Humanities

Applied Mathematics for Engineers (MATH203)

Textbook

- Introduction to Mathematical Physics, Nabil Laham & Nabil Ayoub

Other References

- Advanced Engineering Mathematics, Erwin Kreyszig, 10th edition.
- Mathematical Methods for Physicists. Author: Arfken, G., Academic Press.

Course Objective

To provide the student with the fundamental elements of applied mathematics which are instrumental in all fields of science and engineering.

Course Grading Policy

First Exam	30%	**(7th week)**
Second Exam	30%	**(11th week)**
Final Exam	40%	**Assigned by the registrar**
Course Total Grade	100%	

Cheating or Plagiarism

Cheating is not tolerated and will be dealt with harshly. Any form of cheating will result into immediate failing of the class in accordance with University Regulations.

Classroom Conducts and Attendance:

This will be discussed thoroughly during the first day of classes.

IMPORTANT NOTE: *Absences may be* ***excused*** *by medical certificate but they are* ***never erased****. The only circumstance where an absence is erased is if a student is officially representing the university and has produced a letter from Student Affairs to prove this or if a student must attend an exam on the* ***same day and time*** *as an English class provided an acceptable letter is produced from the relevant Doctor of that subject. All other absences are considered as official and are counted. A verbal warning will be given by the teacher after 3 absences. A written formal warning will be given after 4 absences and a student with 5 absences will be required to drop English and re-register the following semester.*

The following are the instructions given in the university regulations: ***A student is not permitted to absent himself / herself from more than 15% of the total number of credit hours assigned for each course (i.e. four lectures of the total number of lectures prescribed for a course that is being taught two times per week with a duration of one hour and a half per lecture).***

Schedule

Chapter		Homework
3. Complex Numbers	3.2 Complex Numbers and Their Geometric Representation	All odd problems in page 225-228
	3.3 Complex Conjugate	
	3.4 Algebra of Complex numbers	
	3.5 De Moivre's Formula	
	3.6 Powers and Roots of a Complex Variable	
	3.7 Functions of a Complex Variable	
5. Matrices	5.1 Basic Definitions	All odd problems in page 247-249 and page 292-294
	5.2 Laws and Properties of Matrices	
	5.3 Special Matrices	
	5.4 Trace	
	5.5 Matrix Inversion	
4. Determinants, Eigenvalues and Eigenvectors	4.1 Definition and Properties	
	4.3 Properties of Determinants	
	4.4 Solution of a set of Homogeneous Equations	
	4.5 Solution of Nonhomogeneous Equations	
	5.7 Eigenvalues and Eigenvectors	

1. Vector Analysis	1.4 Scalar product	All odd problems in page 102-114
	1.5 Cross Product	
	1.8 Gradient	
	1.9 Differentiation of Vectors	
	1.10 Vector Integration	
	1.11 Divergence	
	1.14 The Curl	
	1.17 Green's Theorem	
2. Curvilinear Coordinates	2.8 Cartesian Coordinates	
	2.9 Spherical Coordinates	
	2.10 Cylindrical Coordinates	