King Saud University
College of Sciences/ Department of Mathematics
Syllabus of: MATH104, First semester 1435/1436H

Course code: MATH104
Course title: General Mathematics (2)
Pre-Requisite: MATH150

Instructor: Dr. Saleem Obaidat
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Text Book: Fundamentals of Mathematics, by M. Bounkhel and M. Alabdullatif

References:

1. H. Anton, Linear Algebra, 9th Edition, John Wiley, New York
2. E. W. Swokowski, Calculus with analytic Geometry. PWS-Kent Publishing Company, 20 Park Plaza, Boston.

- Lecture Notes by Dr. Tariq Al-Fadhel

Course objectives

This course aims to introduce the basic concepts of

- Conic sections and their elements
- Matrices and determinants and some of their applications
- Definite and indefinite integrals and some methods of integration
- Polar coordinates and their relation with the rectangular coordinates
- First order ordinary differential equations and methods of solutions

Course learning outcomes

Students completing this course will be able to:

- Determine type of a given conic section (parabola, ellipse, and hyperbola) and compute its elements.
- Perform arithmetic operations on matrices
- Compute the determinant of a square matrix
- Compute an inverse of invertible square matrix
- Solve a linear system using Gauss elimination method
- Solve a linear system using Crammer's rule.
- Compute definite and indefinite integrals using methods of integration such as: substitution, by parts, quadratic expressions, integration by partial fractions
- Compute areas and volumes of revolution
- Compute areas of some polar regions.
- Compute partial derivatives for functions of several variables
- Apply the chain rule and implicit differentiation.
- Solve first order ordinary differential equations by separating variables
- Solve first order linear differential equations.

Course contents

Week #	Date	Topics	Contact hours (Lectures+Tutorials)
1	31 Aug. 4-Sep.	Conic sections, parabola	3+2
2	September 7-11	Ellipse	3+2
3	September 14-18	Hyperbola, General quadratic equation	3+2
4	September 21-25	Matrices	3+2
		Hajj Vacation	3+2
5	October 12-16	Determinants, Systems of linear equations, Gaussian elimination method.	3+2
6	October 19-23	Gauss-Jordan method, Cramer's rule	3+2
7	October 26-30	Anti-derivatives, indefinite integral. Definite integral and its properties, integration by substitution	3+2
8	November 2-6	Integration by parts	3+2
9	November 9-13	Integration of rational functions, integration by partial fractions	3+2
10	November 16-20	Applications of integration: area, volume (using disk or washer)	3+2
11	November 23-27	Volume (using Cylindrical Shells)	3+2
12	30 Nov.- 4 Dec.	Functions in several variables, partial derivatives	3+2
13	December 7-11	Chain rule, implicit differentiation	3+2
14	December 14-18	First order differential equations: separable equation, linear equation	3+2
15	December 21-25	Revision	3+2
16		**Final Exam**	

Homework assignments:

Chapter	Exercices
1	
2	
3	
4	
5	
6	
7	

Grading

First midterm 25%
Second midterm 25%
Homework assignments 2%
Quizzes 8%
Final Exam 40%