Kingdom of Saudi Arabia
Ministry of Education
Jazan University
Faculty of Science
Mathematics Department

المملكة العربية السعودية
وزارة التعليم
جامعــة جــازان
كلية العلوم
قسم الرياضيات

Course Description

Calculus (III) - Math 319

SEMESTER:	**First semester (2020/2021)**
COLLEGE:	**Engineering College**
COORDINATOR:	**Dr. Mahmoud Ali Bakhit**
OFFICE:	**24**
OFFICE HOURS:	**8-11 Mun & Tue & Thu and by appointment**
E-MAIL:	**mabakhit@jazanu.edu.sa** **mabakhit2008@yahoo.com**
Credit:	**3 hures**
TEXTBOOK:	**J. Stewart, Calculus, Early Transcendentals 10Edition**

Course Description in details:

Chapter	Topic/Activity	Weeks
APPENDICES	Table of basic derivatives	1st Week 30/8-3/9/2020
	Table of basic integrals	
	Basic Trigonometric Identities Basic Properties of Logarithms	
Chapter 1: Polar Coordinates	Polar Coordinates	2nd Week 6-10/9/2020
	Polar Curves, Areas in polar coordinates	
	Length in polar coordinates	
	3Dim coordinate systems	3rd Week 13-17/9/2020
	Distance between two points and Sphere,	
	Vectors	
Chapter 2: Vectors and Geometry of Space Section	Equations of lines	4th Week 20-24/9/2020
	Equations of planes	
	Functions of two or more variables	5th Week 28/9-1/10 /2020
	Limits	
	Continuity	
Chapter 3: Partial Derivatives:	Definition of partial derivatives,	6rd Week 4-8/10/2020
	Higher Derivatives,	
	Clairaut's Theorem, Laplace equation and wave equation	
	Tangent Planes and Linear Approximations	7th Week 11-15/10/2020 Maid T1
	Review of Ch 3- Part I	
	Mid Term Exam 1	
	The Chain rule	8th Week 18-22/10/2020
	Implicit Differentiation	
	Directional Derivatives and the Gradient vector	
	Maxima and Minima: Second Derivatives Test of	9th Week 28/10-5/11 /2020
	Review of Ch 3- Part II	

Chapter 4: Multiple Integrals	**Iterated integrals**	**10th Week** 8-12/11 /2020
	Double integrals over general regions	
	Double integrals in polar coordinates	**11th Week** 15-19/11/2020
	Triple integrals	
	Review of Ch 4- **Part I**	**12th Week** 22-25/11 /2020 **Maid T2**
	Mid Term Exam 2, in 27/3/2019 **From 3 to 5.30 PM**	
	Triple integral over a general bounded region	**13th Week** 29/11-3/12 /2020
	Triple integrals in cylindrical coordinates	
	Triple integrals in spherical coordinates	**14th Week** 6-10/12 /2020
	Review of Ch 4- **Part II**	
	Final Examination	**15th Week** **26-30/4 /2020**

Mid –Term Exams: **The first mid-term exam** will be given during the 7th week.

(Chapter 1 and Chapter 2)

The second mid-term exam will be given during the 12th week.

- **(Chapter 3 and Chapter 4 up to Double integrals in polar coordinates)**

Course Description:

- **Polar coordinates, polar curves, area in polar coordinates.**
- **Vectors, lines, planes and surfaces.**
- **Functions of two and three variables, limits and continuity.**
- **Partial derivatives, directional derivatives.**
- **Extrema of functions of two variables.**
- **Cylindrical and spherical coordinates.**
- **Double integrals, double integrals in polar coordinates.**
- **Triple integrals, triple integrals in cylindrical and spherical coordinates.**

Learning Outcome:

After finishing the course, the student is expected to be familiar with the followings:

- Show the polar coordinates, polar curves and calculate the area in polar coordinates.
- Show the vectors, lines, planes and surfaces.
- Show the Partial derivatives, directional derivatives of functions of two and three variables and extrema of functions of two variables.
- Understand the basic rules of Double integrals, double integrals in polar coordinates, triple integrals, triple integrals in cylindrical and spherical coordinates.
- Develop the student's logical thinking and providing students with skills necessary to solve problems.

Course Assessments:

- First Exam 20%
- Second Exam 20%
- Quizzes and homework 10%
- Final Exam 50%

Methods of teaching the course:

- Academic lectures (Online until further notice)
- Blackboard (BB)
- Homework
- Assign students to prepare scientific projects
- Scientific discussions
- The use of mini-model of education

Scientific References:

- Calculus, J. Stewart, 5 Edition, Brooks/ Cle Publishing Company, (2003).
- Calculus, R. E. Larson, R. P. Hostetler, and B. H. Edwards, 7 Edition, Houghton Mifflin Company, (2002)
- Calculus, G. B. Thomas, Early Transcendentals, 11 Edition, Addition-Wesley, New York (2006)
- Calculus, E. Swokowski, M. Olinic, and D. Pence, 6 Edition, PWS Publishing Company, (1994)
- Calculus, H. Anton, I. Bivens and S. Davis, Early Transcendentals 10th Edition International Student Version (2012).