FACULTY OF SCIENCES - DEPARTMENT OF MATHEMATICS **COURSE SYLLABUS**

COURSE TITLE	ENGLISH	ARABIC		CRI	EDIT	'S
	CODE/NO	CODE/NO.	Th.	Pr.	Tr.	Total
Calculus III for Engineers	Math 207		4	0	0	4
Prerequisites:	Math 206 (Calculus II for Engineers)					
Course Role in Curriculum	Required Co	urse				
(Required/Elective):						
Catalogue Description:						

MATH 207: Calculus III for Engineers

This course covers the calculus of several variables and is the third calculus course in a threecourse sequence. Topics include functions of several variables, partial derivatives, multiple integrals, solid analytical geometry, vector-valued functions, and line and surface integrals. Upon completion, students should be able to solve problems involving vectors and functions of several variables.

<u>Textbooks</u> :	Stewart, James. Calculus, 7th ed, Early Transcendentals,
(Author, Title, Pub., year)	International Metric Version, Brooks/Cole, Cengage Learning
	2012.
	ISBN-13: 9780538498876 / ISBN-10: 0538498870
Supplemental Materials:	Course Notes: First day materials, Guide to assignments

Course Learning Outcomes:

Upon completion of this course, the students should be able to:

- Convert between coordinate systems in three dimensions, and recognize and graph standard 1. equation forms in three dimensions
- Carry out vector operations to solve practical problems 2.
- Evaluate limits and study the continuity of vector-valued functions 3.
- Differentiate and integrate vector-valued functions 4.
- Solve practical problems involving vector-valued functions. 5.
- Evaluate the limits and study the continuity of functions of several variables 6.
- 7. Compute the partial derivatives and multiple integrals of selected functions of several variables
- 8. Utilize the techniques of partial differentiation and multiple integration (together with appropriate technology) to solve practical problems and communicate results
- Carry out scalar and vector operations on vector-valued functions (gradient, divergence, curl) 9.
- 10. Use Green's Theorem to evaluate line integrals.
- 11. Evaluate selected surface integrals
- 12. Evaluate surface integrals using the divergence theorem and Stokes' theorem

<u>To</u>	ppics to be Covered:	Duration in weeks
1.	Chapter 12. Vectors and the Geometry of Space.	2
2.	Chapter 13. Vector Functions.	1.5
3.	Chapter 14. Partial Derivatives.	3.5
4.	Chapter 15. Multiple Integrals.	3.5
5.	Chapter 16. Vector Calculus.	3.5

Student Outcomes addressed by the course: (Put a $\sqrt{\text{sign}}$)

(a)	an ability to apply knowledge of mathematics, science, and engineering	\checkmark
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	
(c)	an ability to design a system, component, or process to meet desired needs within	
	realistic constraints such as economic, environmental, social, political, ethical, health	
	and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a	
	global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for	
	engineering practice.	

Key Student Outcomes assessed in the course: (a)

Instructor or course coordinator:

Last updated: December 17, 2012