MATH 2A Course Outline as of Fall 2010

CATALOG INFORMATION

Dept and Nbr: MATH 2A Title: CALCULUS 3
Full Title: Calculus, Third Course
Last Reviewed: 4/21/2008

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Multivariable calculus including partial differentiation and multiple integration, vector analysis including vector fields, line integrals, surface integrals, and the theorems of Green, Gauss & Stokes.

Prerequisites/Corequisites:
Math 1B.

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Multivariable calculus including partial differentiation and multiple integration, vector analysis including vector fields, line integrals, surface integrals, and the theorems of Green, Gauss, and Stokes. (Grade Only)
Prerequisites/Corequisites: Math 1B.
Recommended:
Limits on Enrollment:

Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		Effective:	Inactive:
	B	Communication and Analytical Thinking	Fall 1981	Fall 2010
	MC	Math Competency		
CSU GE:	**Transfer Area**		Effective:	Inactive:
IGETC:	**Transfer Area**		Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon completion of the course, students will be able to:
1. Compute partial derivatives, directional derivatives and gradients, tangent planes and extrema of functions of two variables.
2. Apply chain rules to multivariable and vector functions.
3. Compute and apply area in the plane, double integrals and volume, center of mass, and moments of inertia.
4. Compute and apply surface area, triple integrals and volume, double integrals in rectangular and polar coordinate systems, and triple integrals in rectangular, cylindrical, and spherical coordinate systems.
5. Apply change of variables to evaluate integrals.
6. Apply vector fields, line integrals, independence of path, surface integrals, and the theorems of Green, Gauss, & Stokes.

Topics and Scope:

I. Functions of Several Variables
   - A. Surfaces in space
   - B. Partial derivatives
   - C. Chain rules
   - D. Directional derivatives and gradients
   - E. Tangent planes
   - F. Extrema of functions of two variables

II. Multiple Integration
   - A. Area in the plane
   - B. Double integrals and volume
   - C. Center of mass and moments of inertia
   - D. Surface area

E. Triple integrals and volume
F. Triple integrals in cylindrical and spherical coordinate systems
G. Change of variables

III. Vector Analysis
A. Vector fields
B. Line integrals
C. Independence of path
D. Surface integrals
E. Theorems of Green, Gauss & Stokes

Assignment:

1. Daily reading outside of class (approximately 20-50 pages per week).
2. Problem set assignments from required text(s) or supplementary materials chosen by the instructor (approximately 1-6 per week).
3. Quizzes (approximately 0-4 per week).
4. Exams (approximately 3-8 per term).
5. Projects (for example, computer explorations or modeling activities, approximately 0-10 per term).

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems	Problem solving 5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice and free response exams; quizzes	Exams 70 - 95%

Other: Includes any assessment tools that do not logically fit into the above categories.

Projects	Other Category 0 - 10%

Representative Textbooks and Materials:
Calculus: Early Transcendentals (6th). Stewart, James. Thomson Brooks/Cole: 2008.
Thomas' Calculus, Early Transcendentals (11th). Thomas, George, et al. Addison-Wesley: 2006.