MATH 8A Course Outline as of Fall 2013

CATALOG INFORMATION

Dept and Nbr: MATH 8A   Title: BRIEF CALCULUS 1
Full Title: Brief Calculus 1
Last Reviewed: 4/19/2010

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	6	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:
Limits, continuity, differentiation, analytic geometry, maxima and minima, rates of change and differentials, integration, calculus of exponential, logarithmic, and trigonometric functions, as well as applications and calculator techniques. For life or social science majors. Students will not receive credit for both Math 8A and Math 1A.

Prerequisites/Corequisites:
Completion of MATH 27 or higher (VF); OR Course Completion of MATH 25 and MATH 58; OR Qualifying Test Score in Math Algebra and Course Completion of MATH 58; OR Qualifying Test Score in Math Trigonometry and Course Completion of MATH 25; OR Qualifying Test Score in Math Algebra and Qualifying Test Score in Math Trigonometry

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Limits, continuity, differentiation, analytic geometry, maxima and minima, rates of change and differentials, integration, calculus of exponential, logarithmic, and trigonometric

functions, as well as applications and calculator techniques. For life or social science majors. Students will not receive credit for both Math 8A and Math 1A. (Grade Only)
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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	Spring 1992	Fall 2013
	MC	Math Competency		
CSU GE:	Transfer Area		Effective:	Inactive:
	B4	Math/Quantitative Reasoning	Fall 1992	Fall 2013
IGETC:	Transfer Area		Effective:	Inactive:
	2A	Mathematical Concepts & Quantitative Reasoning	Fall 1993	Fall 2013
CSU Transfer:		Effective:		Inactive:
UC Transfer:		Effective:		Inactive:

CID:

Certificate/Major Applicable:
Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:
Upon successful completion of the course, students will be able to:
1. Calculate limits and use limit notation.
2. Determine derivatives of polynomial, rational, algebraic, exponential, and logarithmic functions.
3. Use techniques of differentiation, including product, quotient, and chain rules to determine derivatives.
4. Use derivatives to solve and analyze graphing, optimization, and science applications.
5. Determine antiderivatives of polynomial, rational, algebraic, exponential and logarithmic functions.
6. Evaluate definite integrals using the fundamental theorem of calculus.
7. Apply definite integration to compute area, volume, arc length, and to solve problems in life sciences, economics and related fields.
8. Find derivatives and integrals of trigonometric functions.

Topics and Scope:

Instructional methodology may include, but is not limited to: lecture, demonstrations, oral recitation, discussion, supervised practice, independent study, outside project or other assignments.

I. Precalculus
   A. Real number line and order
   B. Absolute value
   C. Exponents and radicals
   D. Polynomials
   E. Rational expressions
   F. Functions and graphs
   G. Limits and continuity
   H. Slope
   I. Distance

II. The Derivative
   A. Slope of a curve
   B. Rates of change
   C. Chain rule
   D. Higher order derivatives
   E. Implicit differentiation
   F. Differentiation of algebraic, logarithmic and exponential functions
   G. Applications of the first and second derivative
      1. Curve sketching
      2. Optimization problems
      3. Related rates
      4. Differentials

III. The Integral
   A. Antiderivatives and indefinite integrals
   B. Definite integral as limit of sum
   C. Integration of algebraic, logarithmic and exponential functions
   D. Midpoint rule for approximating definite integrals
   E. Integration by substitution
   F. Applications of the definite integral
      1. Area
      2. Volume
      3. Marginal analysis

IV. Trigonometric Functions
   A. Trigonometric functions and their graphs
   B. Derivative and Integral formulas for the trigonometric functions

Assignment:

1. Daily reading outside of class (approximately 0-50 pages per week).
2. Homework assignments (10-35).
3. Exams (3-5) and quizzes (0-6) including final exam.
4. Projects (0-2).

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 assignments	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.

Problem solving exams, objective exams and 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:

Brief Calculus With Applications (7th ed.). Larson, Ron; Hostetler, Robert; Edwards, Bruce. Houghton-Mifflin: 2006.