

MATH 1A Course Outline as of Fall 2008**CATALOG INFORMATION**

Dept and Nbr: MATH 1A Title: CALCULUS 1
 Full Title: Calculus, First Course
 Last Reviewed: 9/14/2020

| Units | Course Hours per Week | | Nbr of Weeks | | Course Hours Total | |
|---------|-----------------------|-------------------|--------------|------|--------------------|-------|
| Maximum | 5.00 | Lecture Scheduled | 5.00 | 17.5 | Lecture Scheduled | 87.50 |
| Minimum | 5.00 | Lab Scheduled | 0 | 8 | Lab Scheduled | 0 |
| | | Contact DHR | 0 | | Contact DHR | 0 |
| | | Contact Total | 5.00 | | Contact Total | 87.50 |
| | | Non-contact DHR | 0 | | Non-contact DHR | 0 |

Total Out of Class Hours: 175.00

Total Student Learning Hours: 262.50

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 and continuity, differentiation, applications of the derivative, integration, applications of the integral, methods of integration.

Prerequisites/Corequisites:

Completion of MATH 27 or completion of MATH 25 and MATH 58

Recommended Preparation:**Limits on Enrollment:****Schedule of Classes Information:**

Description: Limits and continuity, differentiation, applications of the derivative, integration, applications of the integral, methods of integration. (Grade Only)

Prerequisites/Corequisites: Completion of MATH 27 or completion of MATH 25 and MATH 58

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC. (CAN MATH18)(MATH 1A+MATH 1B=MATH SEQ B)(MATH 2A+MATH 1A+MATH 1B=MATH SEQ C)

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 | |
| CSU GE: | MC | Math Competency | | |
| | Transfer Area | | Effective: | Inactive: |
| | B4 | Math/Quantitative Reasoning | Fall 1981 | |
| IGETC: | Transfer Area | | Effective: | Inactive: |
| | 2A | Mathematical Concepts & Quantitative Reasoning | Fall 1981 | |
| CSU Transfer: | Transferable | Effective: | Fall 1981 | Inactive: |
| UC Transfer: | Transferable | Effective: | Fall 1981 | Inactive: |

CID:

CID Descriptor: MATH 900S Single Variable Calculus Sequence
SRJC Equivalent Course(s): MATH1A AND MATH1B

Certificate/Major Applicable:

Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:

Upon completion of the course, students will be able to:

1. Calculate limits and use limit notation.
2. Determine derivatives of polynomial, rational, algebraic, exponential, logarithmic, and trigonometric functions.
3. Use techniques of differentiation, including product, quotient, and chain rules, and determine derivatives implicitly.
4. Apply derivatives to graphing, optimization, and science applications.
5. Determine antiderivatives of polynomial, rational, algebraic, exponential, logarithmic, and trigonometric functions.
6. Evaluate definite integrals using the fundamental theorem of calculus.
7. Use numerical integration to approximate definite integrals.
8. Apply definite integration to compute area, volumes, and arc length, and to solve problems in science and related fields.
9. Apply methods of integration, including integration by parts, partial fractions, and use of tables or a computer algebra system.

Topics and Scope:

- I. Limits and Continuity
 - A. Definitions
 1. Limit
 2. Basic limit theorems

- B. Limits from graphs
- C. Continuity
- II. The Derivative
 - A. Definition
 - B. Difference quotients
 - C. Slope of tangent line
 - D. Velocity, acceleration and rates of change
 - E. Product, quotient, and chain rules
 - F. Basic differentiation formulas for algebraic, trigonometric, logarithmic, exponential, inverse trigonometric and hyperbolic functions
 - G. Antiderivatives
- III. Applications of the Derivative
 - A. Implicit differentiation
 - B. Mean value theorem
 - C. Differentials
 - D. Related rates
 - E. Optimization
 - F. Separable differential equations
 - G. Other applications and modeling
- IV. The Integral
 - A. Riemann sums
 - B. Definite and indefinite integrals
 - C. Fundamental theorem of calculus
 - D. Integration of polynomial, logarithmic, exponential, and trigonometric functions
 - E. Integration by substitution
 - F. Numerical integration
- V. Applications of the Integral
 - A. Area
 - B. Volumes
 - C. Arc length
 - D. Other applications and modeling
- VI. Methods of Evaluation
 - A. Integration by parts
 - B. Partial fractions
 - C. Use of tables or computer algebra systems

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.