MATH 1B Course Outline as of Fall 2008

CATALOG INFORMATION

Dept and Nbr: MATH 1B Title: CALCULUS 2 Full Title: Calculus, Second 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 | 17.5 | 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:

Topics include indeterminate forms, conic sections, polar coordinates, infinite sequences and series, parametric equations, solid analytic geometry, and vectors.

Prerequisites/Corequisites: MATH 1A.

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:

Description: Topics include indeterminate forms, conic sections, polar coordinates, infinite sequences and series, parametric equations, solid analytic geometry, and vectors. (Grade Only) Prerequisites/Corequisites: MATH 1A. Recommended: Limits on Enrollment: Transfer Credit: CSU;UC. (CAN MATH20)(MATH 1A+MATH 1B=MATH SEQ B)(MATH 2A+MATH 1A+MATH 1B=MATH SEQ C)

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

| AS Degree: | Area B | Thinking | n and Analytical | Effective: Fall 1981 | Inactive: |
|--------------|----------------------------------|---------------------------------|------------------|-------------------------|-----------|
| CSU GE: | MC Transfer Area B4 | Math Competer Math/Quantitat | 2 | Effective: Fall 1981 | Inactive: |
| IGETC: | Transfer Area 2A | Mathematical Quantitative Re | | Effective: Fall 1981 | Inactive: |
| 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 |
| CID Descriptor:MATH 230 | Multivariable Calculus |
| SRJC Equivalent Course(s): | MATH1B AND MATH1C |

Certificate/Major Applicable:

Major Applicable Course

COURSE CONTENT

Outcomes and Objectives:

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

- 1. Use limits to evaluate indeterminate forms.
- 2. Determine area for surfaces of revolution.
- 3. Define and discuss conic sections as equations, as geometric intersections and as loci.
- 4. Apply differentiation and integration to parametric representations of graphs, including polar graphs.
- 5. Use rectangular, cylindrical, and spherical coordinates.
- 6. Determine convergence of sequences and series.
- 7. Compute Taylor and Maclaurin series and demonstrate applications to elementary functions.
- 8. Compute and use determinants, dot products, cross products, and projections.
- 9. Determine lines and planes in space.
- 10. Describe velocity and acceleration of particles in the plane and in space using vector functions.

Topics and Scope:

- I. Integration and Limits
 - A. Indeterminate forms
 - B. L'Hopital's rule and improper integrals
- II. Topics From Plane Analytic Geometry A. Conic sections

- B. Polar coordinates and graphs
- **III.** Infinite Series
 - A. Sequences and series
 - B. Convergence tests
 - C. Taylor polynomials and approximations
 - D. Power series
 - E. Taylor and Maclaurin series
- IV. Parametric Equations
 - A. Tangents, arc length and areas
 - B. Tangents and area for polar graphs
- V. Topics from Solid Analytic Geometry
 - A. Coordinate systems
 - 1. rectangular
 - 2. cylindrical
 - 3. spherical
 - B. Quadratic surfaces
- VI. Vectors
 - A. Vectors in the plane and in space
 - B. Determinants
 - C. Dot and cross products
 - **D.** Projections
 - E. Lines and planes in space
 - F. Differentiation and integration of vector values functions
 - G. Velocity and acceleration
 - H. Tangent and normal vectors
 - I. Curvature

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.

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

Writing 0 - 0% Homework problems

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

None

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

Multiple choice and free response exams; quizzes

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

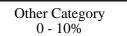
Projects

Skill Demonstrations

0 - 0%

Problem solving 5 - 20%

Exams 70 - 95%



Representative Textbooks and Materials:

Calculus: Early Transcendentals (6th). Stewart, James. Thomson Brooks/Cole: 2008.