### 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	<b>Course Hours Total</b>	
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 <b>Transfer Area</b> B4	Math Competer Math/Quantitat	2	Effective: Fall 1981	Inactive:
IGETC:	<b>Transfer Area</b> 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.

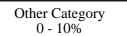
Projects

**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.