



One College Drive, Blythe CA 92225
(760) 921-5500

Course Control Number: CCC000383157		
Course Outline Approval Dates		
Modality	Curriculum Committee	Board of Trustees
Face-to-face		
Correspondence Ed.	12/11/14	1/20/15
Distance Ed.	12/11/14	1/20/15

Course Information

COURSE OUTLINE OF RECORD

Course Initiator: Paul Shibalovich, MA				
CB01 - Subject and Course #: MAT 220				
CB02 - Course Title: Calculus I				
New Course: ☐		Non-Substantial: ☒		Substantial: ☐
Articulation Request:	☒ UC	☒ CSU	☒ CSU-GE	☒ IGETC
Lecture Hours: 90	Laboratory Hours:		Clinical/Field Hours:	
CB06/CB07: Course Units: 5.0				
Prerequisites/Co-requisites/Advisories: MAT 210, Precalculus				
CB03 - TOP Code:	1701.00 - Mathematics, General			
CB04 - Credit Status:	D - Credit - Degree Applicable			
CB05 - Transfer Status:	A - Transferable to both UC and CSU			
CB08 - Basic Skills Status:	N - Course is not a basic skills course			
CB09 - SAM Priority Code:	E - Non-Occupational			
CB10 - Cooperative Work:	N - Is not part of Cooperative Work Experience Education Program			
CB11 - Course Classification:	Y - Credit Course			
CB13 - Approved Special:	N - Course is not a special class			
CB21 - Prior Transfer Level:	Y - Not Applicable			
CB22 - Noncredit Category:	Y - Credit Course, Not Applicable			
CB23 - Funding Agency:	Y - Not Applicable			
CB24- Program Status:	1 - Program Applicable			
Transfer Request:	A= UC and CSU			

Please select the appropriate box(s) of the modalities in which this course will be offered, and fill out the appropriate sections for that mode.

- ☐ Face-to-Face – Section B
- ☒ Correspondence Education – Section C
- ☒ Distance Education – Section D

JUSTIFICATION OF NEED:

This course is a requirement for the student pursuing a degree in medicine, engineering, and science as well as those interested in mathematics, physics, and chemistry. The course also serves as an elective for the AA degree program.

CATALOG DESCRIPTION:

The course covers continuity, differentiation, Mean Value Theorem, rectilinear motion, area between curves, volume of revolution, and applications. It is recommended for math, science, engineering, and medical students.

COURSE OBJECTIVES:

- 1) Transfer to Calculus II at any college.
- 2) Evaluate limits.
- 3) Differentiate functions.
- 4) Find extrema and points of inflection.
- 5) Interpret the Mean Value Theorem.
- 6) Compute volumes of revolution.
- 7) Find areas between curves.
- 8) Find the equation of a tangent line to a curve.
- 9) Calculate differentials.
- 10) Comprehend continuity.
- 11) Know how to apply the Fundamental Theorem of Calculus.
- 12) Integrate functions.
- 13) Calculate velocity, acceleration, and speed of an object moving in rectilinear motion.
- 14) Be able to apply course concepts to practical applications such as rates and maximum/minimum related problems.

STUDENT LEARNING OUTCOMES:

- 1) Compute limits and test functions for continuity.
- 2) Compute derivatives of linear, polynomial, rational, exponential, and logarithmic functions.
- 3) Demonstrate ability to integrate linear, polynomial, rational, exponential, and logarithmic functions.

A. COURSE OUTLINE AND SCOPE

1. Outline of topics or content:

- a) Review of functions, domain, and interval notation.
- b) Limits and continuity of algebraic and trigonometric functions.
- c) Tangent lines and rates of change; definition of derivative; techniques of differentiation; derivatives of trigonometric functions; chain rule; implicit differentiation and differentials.
- d) Related rates; increasing and decreasing intervals of functions; concavity and convexity; relative extreme; first and second derivative tests; graphs of polynomial and rational functions; maximum and minimum values of a function; applications of maximum and minimum; Newton's method; Rolle's Theorem; Mean Value Theorem; rectilinear motion.
- e) Antiderivatives; indefinite integral; integration by substitution; sigma notation; definite integral; First Fundamental Theorem of Calculus; evaluate definite integral by substitution; Mean Value Theorem for integrals; Second Fundamental Theorem of Calculus.
- f) Areas between curves; volumes by slicing disks, washers, and cylindrical shells; length of a plane curve; area of a surface by revolution method; work problems dealing with fluid pressure, pressure, and rate of change.

2. If a course contains laboratory or clinical/field hours, list examples of activities or topics:

This course does not have a laboratory.

3. Examples of reading assignments:

Students are expected to read course textbook to improve his/her performance. In addition, students are required to read, analyze, and solve application problems throughout the semester.

4. Examples of writing assignments:

Writing assignments are required and may include, but are not limited to: exams, projects, and quizzes.

5. Appropriate assignments to be completed outside of class:

Homework exercises, math worksheets, chapter reviews, and projects.

6. Appropriate assignments that demonstrate critical thinking:

Optimization and change of rate problems involving differentiation. Volume applications computed by disk, washer, and cylindrical shell method involving integration.

7. Other assignments (if applicable):

Other assignments may include, but are not limited to: pretest, post-test, and supplementary exercises as directed by the instructor.

☒ Check if Section B is not applicable

B. FACE-TO-FACE COURSE SECTIONS:

Face-to-face education

Is a mode of delivery in which instruction is delivered in a traditional classroom setting, with instructor and students located simultaneously in the same classroom facility.

1. Describe the methods of instruction.

2. Describe the methods of evaluating of student performance.

3. Describe how the confidentiality of the student's work and grades will be maintained.

4. If the course has a lab component, describe how lab work is to be conducted and how student work is to be evaluated.

NOTE: Students will be encouraged by instructors of this course to direct themselves to the College's Disabled Students' Programs and Services (DSP&S) department if they believe they have a learning disability.

☐ Check if Section C is not applicable

C. CORRESPONDENCE EDUCATION COURSE SECTIONS (Correspondence, hybrid correspondence)

Correspondence education

is a mode of delivery in which instructional materials are delivered by mail, courier or electronic transmission to students who are separated from the instructor by distance. Contact between instructor and students is asynchronous.

Hybrid correspondence education

is the combination of correspondence and face-to-face interaction between instructor and student.

1. Describe the methods of instruction.

Methods of instruction for this course will include, but are not limited to: instructional materials delivered by mail, video presentations, phone calls, textbook reading assignments, practice worksheets, and supplemental study guides.

2. Describe the methods of evaluating student performance.

Evaluation of student performance may include, but is not limited to: homework assignments, exams, quizzes, and projects as directed by the instructor.

3. Describe how regular, effective contact between the instructor and a student is maintained.

Regular, effective contact includes, but is not limited to, exams, quizzes, graded homework assignments, graded projects, syllabus receipt, office hours, emails, letters, notes, phone calls, student progress reports, and communication via the Bridge interface.

4. Describe procedures that help verify the individual submitting class work is the same individual enrolled in the course section.

Consistent with policy elements listed in the ACCJC's "Policy on Distance Education and on Correspondence Education," the College verifies the identity of a student who participates in class or coursework by using, at the College's discretion, such methods as a secure log-in and password, proctored examinations, or other technologies or practices that are developed and effective in verifying each student's identification.

5. Describe procedures that evaluate the readiness of a student to succeed in an online, ITV or hybrid course section.

The procedure might consist of a short assessment questionnaire prepared by the instructor and self-administered by the student. The questionnaire would evaluate areas such as working independently, adhering to time-lines, and familiarity with working online and with computer technology. The student would use the resulting score to evaluate his or her readiness to take the course in a correspondence or hybrid correspondence instructional mode.

6. Describe how the confidentiality of the student's work and grades will be maintained.

Instructors shall make reasonable efforts to protect the confidentiality of students' grades and graded work consistent with practices described in the Family Education Rights and Privacy Act (FERPA).

7. If the course has a lab component, describe how lab work is to be conducted and how student work is to be evaluated.

This course does not have a laboratory.

8. If the course requires specialized equipment, including computer and computer software or other equipment, identify the equipment, and describe how it is to be accessed by students.

This course requires a graphing calculator. Computer with Hawkes Learning System software is not required, however it is beneficial to enhance student's learning experience.

Note: Students will be encouraged by instructors of this course to direct themselves to the College's Disabled Students' Programs and Services (DSP&S) department if they believe they have a learning disability.

☐ Check if Section D is not applicable

D. DISTANCE EDUCATION COURSE SECTIONS (online, ITV, hybrid)

Online education

is a mode of delivery in which all instruction occurs online via the Internet. Student and instructor access to email and the Internet is required. Students are required to complete class work using email, chat rooms, discussion boards and other instructional online venues.

Interactive television (ITV)

is a mode of synchronous delivery in which instruction occurs via interactive

television (closed circuit).

Hybrid instruction

is a combination of face-to-face instruction and online instruction.

1. Describe the methods of instruction.

Methods of instruction for this course will include, but are not limited to: use of the Bridge web interface; lectures delivered in video, power point, or PDF document format; interaction via online chat, over the phone, or www.cccconfer.org web platform. Hybrid mode of instruction may include face-to-face meetings with the students.

2. Describe the methods of evaluating of student performance.

Evaluation of student performance may include, but is not limited to: homework assignments, exams, quizzes, and projects as directed by the instructor.

3. Describe how regular, effective contact between the instructor and a student is maintained.

Regular, effective contact includes, but is not limited to: exams, quizzes, graded homework assignments, graded projects, syllabus receipt, office hours, emails, letters, notes, phone calls, student progress reports, and communication via the Bridge interface.

4. Describe procedures that help verify the individual submitting class work is the same individual enrolled in the course section.

Consistent with policy elements listed in the ACCJC's "Policy on Distance Education and on Correspondence Education," the College verifies the identity of a student who participates in class or coursework by using, at the College's discretion, such methods as a secure log-in and password, proctored examinations, or other technologies or practices that are developed and effective in verifying each student's identification.

5. Describe procedures that evaluate the readiness of a student to succeed in a correspondence or hybrid correspondence course section.

The procedure might consist of a short assessment questionnaire prepared by the instructor and self-administered by the student. The questionnaire would evaluate areas such as working independently, adhering to time-lines, and familiarity with working online and with computer technology. The student would use the resulting score to evaluate his or her readiness to take the course in a correspondence or hybrid correspondence instructional mode.

6. Describe how the confidentiality of the student's work and grades will be maintained.

Instructors shall make reasonable efforts to protect the confidentiality of students' grades and graded work consistent with practices described in the Family Education Rights and Privacy Act (FERPA).

7. If the course has a lab component, describe how lab work is to be conducted and how student work is to be evaluated.

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8. If the course requires specialized equipment, including computer and computer software or other equipment, identify the equipment, and describe how it is to be accessed by students.

This course requires graphing calculator and a computer with Hawkes Learning System software.

Note: Students will be encouraged by instructors of this course to direct themselves to the College's Disabled Students' Programs and Services (DSP&S) department if they believe they have a learning disability.

E. REPRESENTATIVE TEXTBOOKS AND OTHER READING AND STUDY MATERIALS:

List author, title, and current publication date of all representative materials.

Ron Larson & Bruce Edwards, Calculus, 10th Edition, 2013, ISBN 978-1-285057-09-5

Franklin Wright, Spencer Hurd, & Bill New, Essential Calculus, 2nd Edition, 2008, ISBN 978-0-918091-93-2

SIGNATURES

COURSE INITIATOR: _____

DATE: _____

DIVISION CHAIR: _____

DATE: _____

LIBRARY: _____

DATE: _____

CHAIR OF CURRICULUM COMMITTEE: _____

DATE: _____

SUPERINTENDENT/PRESIDENT: _____

DATE: _____