Sierra College
Math 32
Calculus III
Spring Semester
2019

Instructor:

Dan Balaguy, V315A
(916) 660-7960
Web Page: http://math.
sierracollege.edu/Staff/dbalaguy/
dbalaguy@sierracollege.edu

Course Identification:

Math 32, Calculus III
Course Code #45775
V324 MW 5:30-7:35 pm
4 units

Office Hours:

MW 9:30-10: 30,
TTh 10:15-11:15,
I will be available in the Math Center on Saturdays from 8 am to 1 pm.

Math Lab:

The Math Lab is located in V329
This is free, walk in tutoring.
Hours:
M: 8 am – 5 pm,
T: 8 am – 7:20 pm,
W: 8 am – 7 pm,
Th: 8 am – 7:20 pm,
F: 8 am – 4 pm,
S: 8 am – 1 pm

Materials:

Text: Calculus, Early Transcendentals,
8th edition, by Stewart;
Cengage Publishing, or
A free online text located at:

https://openstax.org/subjects/math

Calculator: A scientific calculator is allowed on occasion. In addition, a graphing calculator is recommended. Either a graphing calculator or a computer algebra system will be used periodically in the classroom for demonstration

Prerequisites:

Math 31, Calculus II

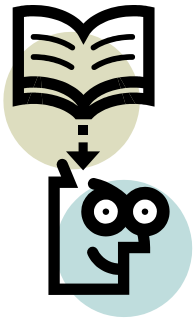
Withdraw Date:

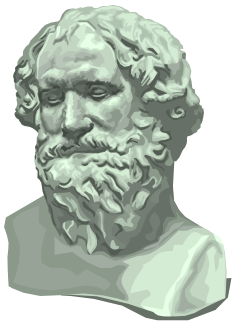
Feb. 10, without a W
April 12, with a W

Holidays:

February 15,
Presidents' Day
April 15 & 17,
Spring Break

purposes. The graphing utility device is an excellent tool for acquiring the understanding of many of the concepts of this course due to its ability to rapidly investigate both the numerical and graphical aspects of these concepts. However, on many exams and quizzes, a calculator will not be allowed. There will not be any opportunity to use graphing calculators, cell phones, tablets, or laptops on the quizzes and exams.





Homework:

Homework will be assigned daily, but will be not be collected. Instead, a quiz will be given each Wednesday (except those days on which we have an exam) covering the material from the previous homework

Exams:

There will be four 100 point exams and a 150 point comprehensive final exam. The lowest of the four regular exam scores or the quiz total will be dropped in the computation of the final course grade. The exam dates are given below:

Grading:

Quizzes:	100 pts
Exams:	400 pts
Final Exam:	150 pts

Quizzes:

There will be more than 10 quizzes, worth 10 points each. The top 10 scores will be used in the computation of your final course grade. There will be no make up quizzes. In having well more than 10, you will easily be able to miss a few.

Group Work:

Working with other students outside of class is strongly encouraged. The Math Lab is an ideal location for working with your peers.

Exam I: February 20
Exam II: March 13
Exam III: April 3
Exam IV: May 1
Final Exam: Week of May 22

Course Description:

Continuation of Math. 31. Vectors and analytic geometry in the plane and space; functions of several variables; partial differentiation, multiple integrals, and application problems; vector functions and their derivatives; motion in space; and surface and line integrals, Stokes' and Green's Theorems, and the Divergence Theorem.

Workload:

The material is treated with scope and intensity that requires the student to study independently outside of class. This course requires a minimum of two hours of work outside the classroom for every one hour in class.

Attendance:

Attendance isn't incorporated in the final course grade. Nevertheless, solid attendance is necessary to succeed in a course that is both rigorous and fast paced.

Drop/Refunds:

A student must drop him/herself in order to be eligible for a refund. Instructor drops do not generate refunds.

Honesty Policy:

Cheating is of course forbidden. College policy on cheating, as outlined in the student conduct code, will be strictly enforced.

Math Department Website:

The Website for the Math Dept. is at http://math.sierracollege.edu/ This website is a useful resource for graphing paper, other Math Department contacts, full course descriptions, example Assessment Tests, past Math Contests, and much more.

Sierra College Website:

The website for the college is at http://www.sierracollege.edu/ This website provides you with class schedules, academic calendars, and contact information for the various student services that this college offers.

Student Outcomes:

Through homework assignments, quizzes, exams, projects and classroom discussions, the student will be able to:

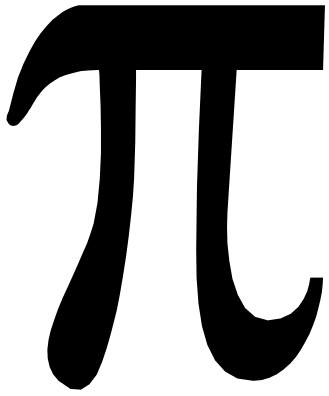
1. **calculate partial derivatives and multiple integrals of multivariable functions;**
2. **translate, model, and solve applied problems utilizing vector functions, partial derivatives, Lagrange multipliers, Second Derivative Test, Green's Theorem, Stokes' Theorem, and the Divergence Theorem;**
3. **utilize graphs of multivariable functions to set up, evaluate, and solve double and triple integrals, including rectangular, cylindrical, and spherical coordinates;**
4. **logically present clear, complete, accurate, and sufficiently detailed solutions to communicate reasoning and demonstrate the method of solving problems;**

Topical Outline:

I. Three Dimensional Analytic Geometry and Vectors
- **A. Three-Dimensional Coordinate Systems**
- **B. Vectors**
- **C. Dot Product**
- **D. Cross Product**
- **E. Equations of Lines and Planes**
- **F. Quadric Surfaces**
- **G. Vector Functions and Space Curves**
- **H. Arc Length and Curvature**
- **I. Motion in Space: Velocity and Acceleration**
- **J. Cylindrical and Spherical Coordinates**

II. Partial Derivatives
- **A. Functions of Several Variables**
- **B. Limits and Continuity**
- **C. Partial Derivatives**
- **D. Tangent Planes and Differentials**
- **E. The Chain Rule**
- **F. Directional Derivatives and the Gradient Vector**
- **G. Maximum and Minimum Values**
- **H. Lagrange Multipliers**

III. Multiple Integrals
- **A. Double Integrals over Rectangles**
- **B. Iterated Integrals**
- **C. Double Integrals over General Regions**
- **D. Double Integrals in Polar Coordinates**
- **E. Applications of Double Integrals**
- **F. Surface Area**
- **G. Triple Integrals**
- **H. Triple Integrals in Cylindrical and Spherical Coordinates**



I. Change of Variable in Multiple Integrals

IV. Vector Calculus

- A. Vector Fields
- B. Line Integrals
- C. Fundamental Theorem for Line Integrals
- D. Greens' Theorem
- E. Curl and Divergence
- F. Parametric Surfaces and Their Areas
- G. Surface Integrals
- H. Stokes' Theorem
- I. The Divergence Theorem

If You Want Your Work to Be Accepted and Graded, Then the Following Must Be Followed:

- Remove any fringe from paper torn out of spiral notebook.
- Do not use graph paper unless it is used solely for graphing.
- All work must be clear and organized.
- A full name must be included.
- Any take home work must be turned in at the very beginning of class on the next class meeting. No late materials will be accepted.
- All paper turned in must be on paper that is approximately 8½ X 11.

Harassment and Discrimination:

Sierra College is committed to providing a safe learning environment, free of harassment and discrimination as described in District policies found on our website. It is my goal that you feel you can share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings and I will seek to keep information you share private to the greatest extent possible; however, I am required to report information about incidents of gender based discrimination, violence and harassment to the College's Title IX Coordinator.