Calculus II

Spring 2012

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Section 8: Class Hours: MoWeFr 12:00 PM - 12:50 PM  
Place: MH 442  
Th 12:00 PM - 12:50 PM  
Place: MH 480

Office Hours: MoWeFr 2:00 PM – 3:30 PM  
Place: MH182H

Course Material

Text: Calculus: California State University – Fullerton, Custom 1e, by James Stewart; CENGAGE Learning, 2009.

We will cover the chapters 6-9. The topics include techniques of integration, series, parametric equations and polar coordinates.

Chapter 6: Techniques of Integration (3 weeks)
6.1 Integration by Parts
6.2 Trigonometric Integrals and Substitutions
6.3 Partial Fractions
6.4* Integration with Tables and Computer Algebra Systems
6.5 Approximate Integration
6.6 Improper Integrals

Chapter 7: Applications of Integration (3 weeks)
7.2 Volumes
7.3 Volumes by Cylindrical Shells
7.4 Arc Length
7.5 Applications in Physics and Engineering
7.6 Differential Equations
Appendix F: Linear Equations

Chapter 8: Series (5 weeks)
8.1 Sequences
8.2 Series
8.3 The Integral and Comparison Tests
8.4 Other Convergence Tests
8.5 Power Series
8.6 Representing Functions as Power Series
8.7 Taylor and Maclaurin Series
8.8* Applications of Taylor Polynomials
Chapter 9: Parametric Equations (2 weeks)

9.1 Parametric Curves
9.2 Calculus with Parametric Curves
9.3.1 Polar Coordinates
9.3.2 Areas and Lengths in Polar Coordinates
9.5* Conic Sections in Polar Coordinates

Calculator: Not allowed during exams and quizzes.

Course Specific Learning Goals

The following is a list of the main specific learning goals for Math 150B.

- To understand and successfully use the integration techniques of integration by parts, trigonometric substitution, and partial fraction decomposition, and to learn the strategies for identifying which technique may best work in helping to evaluate a given integral.
- To understand, and to be able to use, the Trapezoid, Midpoint, and Simpson’s Rules to approximate definite integrals (along with error bounds).
- To correctly identify when a definite integral is improper, and to be able to determine if it converges or diverges by either direct calculation or by using the Comparison Test.
- To learn how to apply the definite integral and integration techniques to the problems of finding the arc length of a curve, the area of a surface of revolution, moments and centroids, and hydrostatic pressure and force.
- To understand the concept of a differential equation, and to be able to determine if a given function is a particular solution to a DE.
- To understand the concept of slope field, to correctly graph simple slope fields, to be able to sketch an approximate graph of the solution to an initial value problem in a field, and to correctly identify any equilibrium solutions.
- To be able to use Euler’s Method to construct the graph of an approximate solution to an initial value problem.
- To correctly identify when a DE is separable and to be able to set up and solve separable DE’s for a variety of applications (such as population growth and mixture problems).
- To understand the concept of parametric equations, to be able to graph parametric curves (including the direction of motion on the curve), and to learn how to eliminate the parameter (when possible) to find an equation in x and y for the curve.
- To understand and successfully apply calculus to parametric curves to find derivatives, areas, and arc lengths.
- To study the polar coordinate system, to learn how to graph polar curves, and to apply calculus to polar curves to find derivatives, areas, and arc length.
- To understand the concepts of a sequence and the limit of a sequence, and to be able to calculate the limit of a sequence by using a continuous function.
- To grasp the concept of an infinite series (and to understand that its sum is the limit of the sequence of its partial sums), and to study geometric series and the conditions for its convergence and divergence.
- To learn and effectively apply series tests such as the Integral Test, p-series test, the Comparison Tests, Alternating Series Test, and the Ratio Test, and to learn how to identify which test(s) may work best in determining if a series converges or diverges.
- To comprehend the theory of Power Series, including radius of convergence and interval of convergence, and to be able to develop new Power Series from known series.
- To understand the theory behind Taylor Series, to be able to find Taylor Series by using the definition, and to be able to find Taylor Series using known series.
General Education Learning Goals  

Math 150B will also satisfy the following General Education learning goals.

- To understand and appreciate the varied ways in which mathematics is used in problem-solving.
- To understand and appreciate the varied applications of mathematics to real-world problems.
- To perform appropriate numerical calculations, with knowledge of the underlying mathematics, and draw conclusions from the results.
- To demonstrate knowledge of fundamental mathematical concepts, symbols, and principles.
- To solve problems which require mathematical analysis and quantitative reasoning.
- To summarize and present mathematical information with graphs and other forms which enhance comprehension.
- To utilize inductive and deductive mathematical reasoning skills in finding solutions, and be able to explain how these skills were used.
- To explain the overall process and the particular steps by which a mathematical problem is solved.
- To demonstrate a sense of mastery and confidence in the ability to solve problems which require mathematical concepts and quantitative reasoning.

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Attendance

Class attendance is required and preparatory reading will be assumed. If any attendance issue arises, especially in regard to exams, it is up to the student to keep the instructor aware. All electronics including cell phones, watch alarms, etc., must be turned off before entering the classroom and left off until lecture is over for the evening.

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Keys to Success

The best and only way to succeed in this course is to solve as many problems as you can. I strongly recommend that you solve a lot more problems than those asked on the assignments, and also you spend a substantial amount of time reading the text on your own.

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Homework

Homework Assignments will be handled through the online WebAssign system (www.webassign.com). Please familiarize yourself with the system immediately. To register, you need to enter the code

Section 8: fullerton 1223 5999

Further details will be given in the first class.
Midterm and Final Exams

Exam 1: February 17, Friday
Exam 2: March 23, Friday
Exam 3: April 27, Friday
Final: May 18, Friday; Noon – 1:50 PM; Room MH 442

Make-up policy

There is no make-up exams. So check your schedule to ensure that you have no time conflicts with the above exam schedules. The instructor reserves the right to change the dates of any exams.

Grading

Your final grade will be based on homework and exams. Homework will count for 10%, each midterm exam will count for 20%, and your final exam will count for 30%. Letter grades with plus-minus will be assigned based on the distribution of the total scores. In borderline cases, I reserve the right to raise any student's semester grade for contributing to our class with a positive attitude, hard work, and active participation.

Important Dates

February 6 (Monday): Last day for students to ADD with a permit. All permits expire at midnight on February 6.

February 6 (Monday): Last day for students to DROP without a grade of “W”. Students drop using Titan Online.

March 2 (Friday): Last day the Math Department will be flexible on the approval of late withdrawal requests. Beginning Monday, March 5, students must have a serious and compelling reason for withdrawing (e.g. medical reason) and must provide supporting documentation for their reason.

April 20 (Friday): Last day to withdraw with a truly serious and compelling reason that is clearly beyond the student’s control. Students must document their reason.

PERMIT PROCESS

I will sign the Permit form for you. Then you should go to the Math Dept (MH-154). They will place a Permit on their student record. Students will be responsible to go on Titan and add the class. Permit form are available in the department office for students to pick up. Students MUST add the class themselves by the specific date. The Permit does not place you in the class.
Disability accommodations

The University requires students with disabilities to register with the Office of Disabled Student Services (DSS), located in UH-101 and at (714) 278 – 3112, in order to receive prescribed accommodations appropriate to their disability. Students requesting accommodations should inform the instructor during the first week of classes about any disability or special needs that may require specific arrangements or accommodations related to attending class sessions, completing course assignments, writing papers or

Academic integrity

Students who violate university standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the university. Since dishonesty in any form harms the individual, other students and the university, policies on academic integrity are strictly enforced. I expect that you will familiarize yourself with the academic integrity guidelines found in the current student handbook (see the website at the following address:

http://www.fullerton.edu/deanofstudents/judicial/policies.htm).

Examples of actions that constitute academic dishonesty include, but are not limited to:

1. Unacceptable examination behavior, i.e. communicating with fellow students, copying material from another student’s exam or allowing another student to copy form an exam, possessing or using unauthorized materials, or any behavior that defeats the intent of an exam.
2. Plagiarism, i.e. taking the work of another and offering it as one’s own without giving credit to that source, whether that material is paraphrased or copied in verbatim or near-verbatim form.
3. Unauthorized collaboration on a project, homework or other assignment.
4. Documentary falsification including forgery, altering of campus documents or records, tampering with grading procedures, fabricating lab assignments, or altering medical excuses.

Emergency Evacuation

In the event of an emergency such as earthquake or fire:

- Take all your personal belongings and leave the classroom.
- Use the stairways; do not use the elevator (they might not be working once the alarm sounds).
- Go to the lawn area towards Nutwood Avenue.
- Stay with your classmates for further instruction. For further information on exits, fire alarms, and telephones, see the Building Evacuation Maps located near each elevator. Anyone who may have difficulty to evacuate the building please see the instructor.

The Professor reserves the right to change the content of the syllabus at any time.