Math 3B
Calculus II

Course Description
This is the second course in the 3-semester calculus sequence. Applications of the definite integral: Methods of integration, polar coordinates, parametric equations, infinite and power series.

Student Learning Outcomes
- Develop problem solving abilities: Synthesize data, translate words into math language, and construct an abstract model that describes the problem. (Proof and Deductive Reasoning Skills)
- Given data, students will analyze information, and create a graph that is correctly titled and labeled, appropriately designed, and accurately emphasizes the most important data content. (Graphing)
- Students will be to write and manipulate complex algebraic expressions and general functions, integrate algebraic and transcendental functions, and work with sequences and power series expressions. (Compute, Simplify, and Solve)

Course Topics
1. Techniques of Integration
   a. Integration using substitution
   b. Integration by parts
   c. Using integral tables
   d. Integrations of rational functions by substitution or partial fractions

2. Definite Integral Applications
   a. Computing area of plane regions
   b. Computing the volume of a solid of revolution
   c. Moments and centroids of a plane region
   d. Improper integrals
   e. Work
   f. Average value of a function over an integral
   g. Estimates of definite integrals: Simpson’s method, Trapezoidal Rule

3. Plane Curves & Polar Coordinates
   a. Polar coordinate system
   b. Computing area in polar coordinates
   c. Arc Length and speed of a curve
   d. Area of a surface of revolution

Required Materials
- Enhanced WebAssign Access for Homework & ebook for Stewart’s Calculus: Early Transcendentals, 7th Ed
  - Single Term Access if Math 3B is your last course
  - Lifetime of Edition Access if taking Math 3C in Fall 2015
- TI-83/84/89 Graphing Calculator
- Access to a Computer w/Internet
- General supplies such as pencils, a large eraser, at least 3 colored pens, a highlighter, a ruler

Recommended Materials
- 2” Class Binder and 4 divider tabs as follows:
  0. Syllabus (should be in the front before tabs begin)
  1. Class Notes & Worksheets
  2. Homework
  3. Exams
4. Infinite Series & Related Topics
   - Sequences and series
   - The integral test
   - The comparison test and the ratio test
   - The alternating-series and absolute-convergent tests
   - Power series
   - Taylor's formula

Student Expectations

Below is a list of expectations I expect from my students:

- Read the textbook before coming to class.
- Arrive to class on time, especially for exams.
- If you need to leave early or arrive late, please do so in manner that does not disrupt my lecture or your classmates.
- Participate during lecture by asking & answering questions.
- Complete homework in a timely fashion that avoids cramming.
- Ask homework questions during office hours.
- Give yourself at least 3-5 days to prepare for an exam and 2 weeks to prepare for the final.

Homework

Homework Website: http://www.webassign.net/
Class Key: alameda.peralta 5624 9364

With the exception of the Math 3A Review Assignment, homework will be completed through WebAssign. You must keep a written record of your work for studying purposes OR in the event your account information is compromised.

You will have 5 tries to submit a correct answer before it is marked incorrect. For problems with multiple parts, partial credit is awarded. The program has Master It & Video Example features built into some of the homework problems. The Master It option displays an example problem and interactively helps you solve it, while the Video Example displays a video of an example problem.

Homework from one week's lecture is generally due online the following Monday at 5:00 pm (unless otherwise specified). After the homework is due, PDFs are available within the program with worked out solutions. No late online homework will be accepted under any circumstances; do not ask me for an extension. That said, I will drop the lowest score from your final grade.

Note: If you don't have access to a computer at home, you are more than welcome to use the computers in the Math Lab (L207) or the Open Lab (L202E). If you do this, you must sign up for LRNRE 501 – Supervised Tutoring (Course Code: 30061) to utilize these services. This course is a no-credit ungraded course that will not show up on an official transcript. Your effort to sign up this course will help keep our labs open and free to all students.

Grading

Homework: 30%
Exams: 40%
Final Exam: 30%

Grading Scale

Let $x$ represent your grade.

A: $90 \leq x < 100$
B: $80 \leq x < 90$
C: $70 \leq x < 80$
D: $60 \leq x < 90$
F: $0 \leq x < 60$
Exams

Below is a list of exam dates with the material covered for each.

Exam 1: Monday, 6/22/15
- Covers Sections 5.5, 6.1-6.3, & 6.5

Exam 2: Monday, 6/29/15
- Covers Sections 7.1-7.6

Exam 3: Monday, 7/6/15
- Covers Sections 6.4, 7.7, 7.8, & 8.1-8.3

Exam 4: Monday, 7/13/15
- Covers Section 10.1, 10.2 & 10.5

Exam 5: Monday, 7/20/15
- Covers Sections 10.3, 10.4, 10.6, & 11.1

We will have 5 exams which will be 1-1.5 hours consisting of calculator and no calculator portions. You will need to bring a photo ID to the first test. Review questions will be provided the week prior to each exam to give you ample time to prepare.

The dates listed above are tentative to the pace of course and may be subject to change. I also reserve the right to make an in-class exam, or part thereof, take home. There will be no make-ups under any circumstances. That said, I will drop the lowest exam score from your final grade.

Final

Date & Time: Thursday, 7/23/15, 5:00 – 7:00 pm
Covers: Section 5.5, Chapters 6-7, Sections 8.1-8.3, & Chapters 10-11

The final exam will be cumulative. This exam will also consist of calculator and no calculator portions. Absolutely no make-ups or rescheduling of the final exam (especially if you schedule a flight that conflicts with this date). You’ve been warned!

Adding & Dropping

It is your responsibility to officially drop the course if you choose not to complete it (even if you never show up). Please note the important dates below:

Last Day to Add, Drop with a Refund or without a W: Sunday, 6/21/15
Last Day to Drop with a W: Tuesday, 7/14/15

On a case-by-case basis, I reserve the right to drop you if you miss the first two class sessions or miss 3 total sessions. Attendance is taken twice by sign-in sheet. Missing 1 sign-in will count as ½ an absence.

Religious Holidays

Reasonable accommodations will be made for you to observe religious holidays when such observances require you to be absent from class activities. It is your responsibility to inform me during the first two weeks of class, in writing, about such holidays.
Students with Disabilities

Students with documented learning and/or physical disabilities may receive reasonable classroom and/or testing accommodations. These arrangements need to be made with me privately within the first two weeks of class or as soon as the documentation is determined. You will have to show me an accommodation slip that you received from DSPS. You can find DSPS in D-117 or contact them via telephone at (510) 748-2328. Unfortunately, I will not be able to accommodate last minute requests.

Course Help

Calculus is not an easy subject, which means the average student will need help throughout the course. Below is a list of resources where students can go to get course help.

- WebAssign's Master It & Video Example Features
- Office Hours
- Forming a study (Do this within the first week of school!)
- Checking out another Calculus textbook from the Library for reference
- CoA Math Lab, L 207
  - Open M – Th 10 am – 2:50 pm
- Khan Academy: [www.khanacademy.org/math/integral-calculus](http://www.khanacademy.org/math/integral-calculus)
- Paul's Notes: [tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx](http://tutorial.math.lamar.edu/Classes/CalcII/CalcII.aspx)

Academic Honesty

College of Alameda and myself take cheating very seriously. Please make sure any work produced is your own. It is also your responsibility to ensure other students are not copying from you (e.g., two identical tests will be considered both students' responsibility). At the very least, anyone caught cheating will receive a 0 on their exam or assignment, and will NOT have any of their lowest scores dropped from their final grade. Consequently, your grade will severely be reduced. In some instances, a student may be asked to leave the course. You also run the risk of being reported to the dean and facing disciplinary action from the college. If you are having trouble in the course come talk to me or a counselor. I am more than happy to give any advice or help you with any concepts giving you trouble, tips for studying, etc. Cheating is never worth risking your education!
Tentative Calendar

Monday, 6/15/15
- Syllabus & WebAssign
- Section 5.5: Substitution Rule
- Section 6.5: Average Value of a Function

Tuesday, 6/16/15
- Section 6.1: Areas Between Curves
- Section 6.2: Volumes

Wednesday, 6/17/15
- Section 6.2 (Continued)
- Section 6.3: Volumes by Cylindrical Shells

Thursday, 6/18/15
- Section 7.1: Integration by Parts
- Section 7.2: Trigonometric Integrals

Monday, 6/22/15
- Midterm 1 (Sections 5.5, 6.1-6.3, & 6.5)
- Section 7.2 (Continued)
- Section 7.3: Trigonometric Substitution

Tuesday, 6/23/15
- Section 7.3 (Continued)
- Section 7.4: Integration of Rational Functions By Partial Fractions
- Section 7.5: Strategy for Integration

Wednesday, 6/24/15
- Section 7.6: Integration Using Tables and Computer Algebra Systems
- Section 7.7: Approximate Integration

Thursday, 6/25/15
- Section 7.8: Improper Integrals
- Section 8.1: Arc Length

Monday, 6/29/15
- Midterm 2 (Sections 7.1-7.6)
- Section 8.2: Area of a Surface of Revolution

Tuesday, 6/30/15
- Section 8.3: Applications to Physics & Engineering
- Section 6.4: Work

Wednesday, 7/1/15
- Section 10.5: Conic Sections
- Section 10.1: Curves Defined by Parametric Equations

Thursday, 7/2/15
- Section 10.2: Calculus with Parametric Equations
- Section 10.3: Polar Coordinates

Monday, 7/6/15
- Midterm 3 (Sections 6.4, 7.7, 7.8, 8.1-8.3)
- Section 10.4: Calculus with Polar Coordinates
Tuesday, 7/7/15
- Section 10.4 (Continued)
- Section 10.6: Conic Sections in Polar Coordinates
- Section 11.1: Sequences

Wednesday, 7/8/15
- Sections 11.1 (Continued)
- Section 11.2: Series

Thursday, 7/9/15
- Sections 11.3: The Integral Test & Estimating Sums
- Section 11.4: The Comparison Tests

Monday, 7/13/15
- Midterm 4 (Sections 10.1, 10.2 & 10.5)
- Sections 11.5: Alternating Series

Tuesday, 7/14/15
- Section 11.6: Absolute Convergence & the Root and Ratio Tests
- Section 11.7: Strategy for Testing Series

Wednesday, 7/15/15
- Section 11.8: Power Series
- Section 11.9: Representations of Power Series as Functions

Thursday, 7/16/15
- Section 11.10: Taylor & MacLaurin Series

Monday, 7/20/15
- Midterm 5 (Sections 10.3, 10.4, 10.6, & 11.1)
- Section 11.11: Applications of Taylor Series

Tuesday, 7/21/15
- Review for Final

Wednesday, 7/22/15
- Review for Final

Thursday, 7/23/15
- Final Exam (5–7 pm)

Disclaimer: I reserve the right to amend this syllabus at any point in the semester.