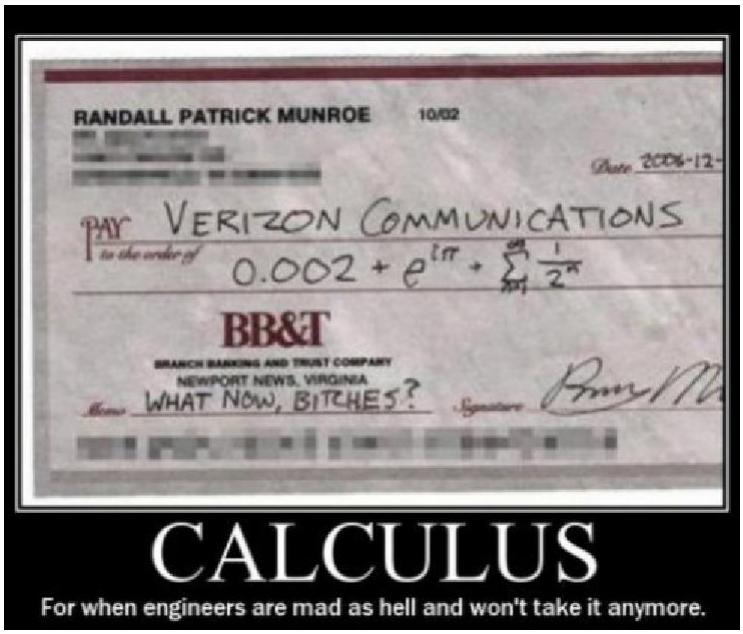
Calculus II



Math3B 20216 Summer 2021 June 21 – July 23 College of Alameda

Course Catalog Description

5 units, 5 hours lecture (GR)

Instructor: TBD

Prerequisite: Math 3A

Acceptable for credit: CSU, UC

Applications of the definite integral: Methods of integration, polar coordinates, parametric equations, infinite and power series. 1701.00

AA/AS area 4b; CSU area B4; IGETC area 2.

In This Syllabus

Materials

This is a Zero Textbook Cost course. As such, all of our materials (including textbook) are available, for no extra cost, online.

It is IMPERATIVE that you have frequent, consistent, reliable access to a computer and the internet.

You do need an email account.

How to succeed in this course

For a "Satisfactory" Grade

- Be active on Slack: post questions, post comments, and stay connected.
- Watch the online video examples and come to almost all of the in-class lectures.
- Submit most of the homework assignments (at least 70%).
- Look over the exam study guides.

For a "Good" or "Excellent" Grade

Do the other items PLUS:

- Be very active on Slack: Post questions, offer answers, and make suggestions about what might help your learning
- Actively read the reading assignments; get help when you don't understand the examples
- Take notes on the examples I do in the videos: I'm showing you how they should be solved. Take notes in class even if it isn't your day to post notes.
- Submit almost all of the homework assignments; if you get behind, come see me as soon as possible
- Practice, practice, practice! and do extra credit.

Course Requirements

Attendance: As stated in the Academic Regulations, Policies & Standards for the College of Alameda (COA), students "are expected to be in class, prepared for instruction, at the designated class starting time."

Technological Skills: Since this is a hybrid course, you will need to be very familiar with online technologies. Please see Canvas for more details.

Quizzes: Frequently, there will be an opportunity to earn class participation points in the form of a quiz. Almost all quizzes will be "open neighbor" because I want to encourage you to work with and learn from each other. I also want to check in with you about your understanding of the material and give you feedback on your progress in the class so far. Quiz topics will be announced in advance. The dates of quizzes are posted in the schedule in Canvas. There are **no make-up quizzes**, but only the highest ten scores are counted towards your grade.

Homework: Homework consists of reading assignments, written exercises, class notes posts, and video watching. Points are available for submitting written exercises and posting class notes. Due dates and more info on submitting these assignments are available on Canvas.

Exams: There will be four exams (three midterm exams and a final exam). The dates for the exams are listed on the schedule. Please note that two midterms are completed in-class and one midterm is completed at-home. There are **no make-up exams**. You may not reschedule an exam.

There will be two versions of the final exam (cumulative and non-cumulative). You can replace a midterm score with your score on the cumulative final exam. If you are satisfied with your midterm exam scores, then you can take the non-cumulative final exam.

If you miss exactly one midterm, you should take the cumulative final and your score on the final will replace your score on that midterm. If you miss more than one midterm, your absences are impacting your ability to succeed in the course and I recommend you consider withdrawing from the class. Absence from the final exam without a valid excuse will result in an "F" symbol being entered in your record.

Assessment Activities

Quizzes	10 quizzes @ 20 pts/quiz	200 points
Homework	20 hw @ 10 pts/hw	200 points
Midterm Exams	3 exams @ 150 pts/exam	450 points
Final Exam	1 final @ 150 pts/final	150 points

Evaluation Scale

Let x represent your total number of points.

A: $880 < x$
B: $780 < x < 879.9$
C: $680 < x < 779.9$
D: $500 < x < 679.9$
F: $x < 499.9$

A Note About This Online Class

How are you going to learn material online? Here's how:

(1) Complete the homework assignments *each week*. **This is not a self-paced course.** If you skip a few weeks, it will be nearly impossible for you to catch up. Because deadlines will help you learn the material, in this course we have deadlines. Follow them.

(2) Complete all of the homework assignments - not just the ones that you will turn in for credit. Reading assignments and video watching assignments are also assigned. Do them.

(3) Engage online and in-class - the more you talk about math, the easier it is to master. Participate.

Student Learning Outcomes

Throughout this course, students develop problem solving abilities: synthesizing data; translating words into math language; and constructing abstract models that describe problems.

After completing this course, students are able to write and manipulate complex algebraic expressions and general functions, integrate algebraic and transcendental functions, and work with sequences and power series expressions.

Given data, students are able to analyze information, and create a graph that is correctly titled and labeled, appropriately designed, and accurately emphasizes the most important data content.

Academic Accommodations

"If you have a disability which may require classroom or test accommodations, please contact Programs and Services for Students with Disabilities (DSPS) in Room D117 or call DSPS at 510-748-2328. You will need to provide written documentation of your disability. If you think you have a disability but currently have no documentation, DSPS may be able to help you. If you already have an accommodation notification from DSPS, please submit it to the instructor immediately. All information will be kept confidential."

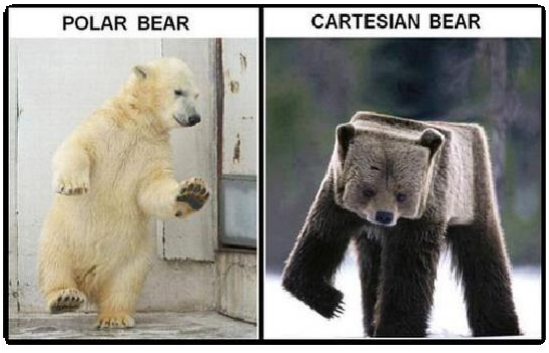
Academic Dishonesty

The College follows the legal opinion set forth by the California Community Colleges' legal department which limits the consequences of an act of academic dishonesty to a failing grade on the activity, assignment, or test involved. For more information on student standards of conduct, discipline procedures, and due process, please see District Policies and Procedures.

Help and Resources

COA provides a comprehensive program of services to assist students to obtain the maximum benefit from their education. Information about services for students can be found in College of Alameda Course Catalog. The Student Center (Building "F") houses the Student Leadership Office, Cafeteria, the Student Lounge, the Cyber Cafe, offices of the ASCOA, mailboxes for recognized clubs and organizations, Student Health Services, and the College Store.

If you need to get online but don't have internet access, I encourage you to use the computers in the Math Lab or the Open Lab (top floor of the L-Building). To do this, sign up for LRNRE 501 – Supervised Tutoring. 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.



Other services include:

- Extended Opportunity Programs and Services (EOP&S)
- Drop-in academic help in the Learning Resource Center (LRC)
- Veterans and Veterans' Dependents Services

Week	Lecture 1	Lecture 2	Reading	Homework Assigned	Class participation
1	Introductions	Integration Technique 1: u-Substitution	5.5	HW 1	Q1 intro quiz (complete online within one week or 24hrs, if you enroll late.)
	Integration Technique 1: u-Substitution	Integration Technique 2: Integration by Parts	5.5, 7.1	HW 2	
	Integration Technique 2: Integration by Parts	Integration Technique 3: Trigonometric Integrals	7.1, 7.2	HW 3	Q2 group quiz
	Integration Technique 3: Trigonometric Integrals	Integration Technique 4: Trigonometric Substitution	7.3, 7.4	HW 4	
	Integration Technique 4: Trigonometric Substitution	Partial Fraction Decomposition	7.4, 7.6	HW 5	Q3 solo quiz
2	Integration Technique 5: PFD	Approximating Definite Integrals (Trapezoidal, Midpoint, and Simpson's Rules)	7.6, 7.7	HW 6	
	Error Analysis for Approximating Definite Integrals	Review for Exam 1	7.7	HW 7	Q4 group quiz (what do I need to review for the first exam?)
	Exam 1		extra credit assignment 1		
	Applications of Integration: Arc Length & Surface Area		8.1, 8.2	HW 8	
	Review: Limits!	Improper Integrals	7.8	HW 9	
	Review: Sigma Notation and Pattern Recognition		Appendix E	HW 10	
	What is a Sequence?	What is a Series?	11.1, 11.2	HW 11	Q5 group quiz
3	Telescoping Series	Geometric Series	11.2	HW 12	
	Direct Comparison Test	Limit Comparison Test	11.4	HW 13	Q6 group quiz
	Integral Test		11.3	HW 14	
	Alternating Series Test	Absolute Convergence vs. Conditional Convergence	11.5, 11.6	HW 15	Q7 solo quiz
	Ratio Test	Root Test	11.6	HW 16	

	Review	Exam 2	extra credit assignment 2		
	Intro to Power Series: domains of convergence				
4	Domains of convergence		11.8	HW 17	
	Techniques for finding a power series to rep a function 2: Adding, Multiplying, and Dividing Power Series	Techniques for finding a power series to rep a function 1: Manipulating Geometric Series	11.8, 11.9	HW 18	Q8 group quiz
	The Big Picture Flow Chart	Techniques for finding a power series to rep a function 3: Integrating and Differentiating Power Series	11.9,11.10	HW 19	
	Examples of Using Series to Integrate, Differentiate, and Approximate	Taylor and MacLaurin Series: finding the coefficients	11.10	HW 20	Q9 group quiz
	Taylor Polynomials		11.10	HW 21	
		Taylor's Inequality	11.11, 11.10	HW 22	Q10 solo quiz
5	Introduction to Parametric Equations	Exam 3			
	Calculus with Parametric Equations	Calculus with Parametric Equations	10.1, 10.2		Q11 group quiz
	Area and Length in Polar Coordinates	Introduction to Polar Coordinates	10.2, 10.3		
	Area Between Curves		10.4		Q12 group quiz
	Volumes: Method of Cylindrical Shells	Volumes	6.1, 6.2		
	Moments and Centers of Mass	Work	6.3, 6.4		Q13 group quiz
	Final Exam	Consumer Surplus	8.3, 8.4		