

Math 133 — Calculus II

Instructor Information

Instructor: Ben Salisbury, Assistant Professor
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Office: Pearce 206H
Office Hours: Tuesday 11am–12pm and 2pm–3pm, Wednesday 1pm–2pm, or by appointment.

Course Information

Meeting Times: MTuWTh 10:00–10:50am in Pearce 226
Course Text: *Essential Calculus: Early Transcendentals*, second edition, by James Stewart
Webpage: <http://people.cst.cmich.edu/salis1bt/mth133f13>

Description: Techniques of integration, applications of definite integrals, improper integrals, elementary differential equations, infinite series, Taylor series, and polar coordinates.

Expectations: You are expected to work hard! Mathematics is a challenging subject which is best learned through practice, practice, and more practice. You are expected to read the material to be covered in class *ahead of time* so you will be better equipped to ask and answer questions during the lecture. My lectures should serve as a guide and additional explanation, as well as a venue to ask questions and receive evaluation, as *you* learn the material. Additionally, homework exercises and practice, which are addressed below, may be even more beneficial if attempted after the first reading of the corresponding section but before the class in which they are covered. This way you have an opportunity to think about the problems ahead of time and form any coherent and well-thought-out questions to be asked during class. In my experience, one of the aspects that students struggle with most, in general, is how to form the question to which they need answering.

Suggestion: Given the difficulty of the topics being presented throughout this semester, I cannot stress how important it is not to let yourself fall behind. If at any point you feel that you are not understanding the material as well as you should, then you need to formulate thoughtful questions to be asked during class that address your difficulties or, perhaps better, visit me during office hours or schedule an appointment to discuss the matter directly. You are urged to take advantage of office hours as often as you need!!

Grading Breakdown

Homework		5%
Quizzes	Weekly	15%
Exam 1	Thursday, October 17	25%
Exam 2	Tuesday, November 26	25%
Final Exam	Monday, December 9, 10am–11:50am	30%

Important: There are no make-ups for quizzes nor exams. In the event of an extreme emergency, an exception to this policy may be allowed. However, this exception is at the sole discretion of the instructor.

Homework Assignments

There will be many homework exercises assigned for each section which, as an active participant in this class, you should attempt each one on your own and ask for help only after you have made a valiant effort. After all, you will not be able to work with anyone else on a quiz or an exam. Even though the homework constitutes only a small portion of the numerical grade, it cannot be undervalued as an essential tool to completely understand the material presented. Hence, it should be taken very seriously if one intends to succeed in this class.

You will be assigned problems from the text which you will be expected to hand in at the *beginning of class* on the due date given in class. This due date will typically be one week after the section is covered in class. ***No late (which includes at the end of the class) homework assignments will be accepted.*** Moreover, homework must be neat and in the order the problems were assigned. Part of being a college student is learning to be professional, so your homework should be treated as a formal report that you would hand in at a job. That is, sloppy or unreadable homework (according to the instructor's judgement) will be considered ineligible for grading and you shall receive no credit.

Additional Notes

- No attendance will be taken in class *but* you are responsible for knowing the material, assignments, and anything else presented and announced in class. While attendance in class is (theoretically) optional, be advised that your grade will most assuredly suffer from repeated absence from the lectures.
- Calculators are allowed, and your particular choice of calculator brand and model is up to you. However, be aware that all work must be shown on homework, quizzes, and exams in order to receive full credit. Please also know that I am aware that there exist calculators in which entire collections of notes may be stored and retrieved upon command, which may not be used on quizzes nor exams. Moreover, you may not use an app on a cell phone, iPod, or any device which transmits or takes photographs. Violation of this calculator policy is a violation of the CMU Academic Integrity policy and will be dealt with accordingly.
- The *Mathematics Assistance Center* offers students free tutoring for our course. They are located in Park Library, Room 428 (Monday through Thursday 9am-9pm) and in Troutman Hall, Room 002 (Sunday 5pm-9pm and Monday through Thursday 2pm-9pm). For more information, please call (989) 774-2290, email MathAC@cmich.edu, or go to https://www.cmich.edu/colleges/cst/math/support_services/Pages/Mathematics%20Assistance%20Center.aspx.
- Blackboard will be incorporated to some extent in this course. If you have a technical issue related to Blackboard, please contact the OIT Help Desk at (989) 774-3662, <http://helpdesk.cmich.edu>, or helpdesk@cmich.edu.
- There are resources on our course webpage that will help you understand and visualize topics in class. You are encouraged to use these resources throughout the semester and to continue to check for updates, as more resources may be added as the semester progresses.
- The last day to drop the class with a refund is Friday, August 30. The final day to withdraw from a sixteen week course is Friday, November 1.
- CMU provides students with disabilities reasonable accommodation to participate in educational programs, activities, or services. Students with disabilities requiring accommodation to participate in class activities or meet course requirements should first register with the office of Student Disability Services (120 Park Library, telephone: 989-774-3018, TDD 989-774-2568), and then contact me as soon as possible.

Course Outline

Week	Section	Title	Exercises
1	—	Review of Calculus I	
	5.5	The Substitution Rule	#3, 4, 8, 12, 13, 20, 29, 32, 38, 39, 44, 50, 56, 59, 62
2	6.1	Integration by Parts	#4, 5, 6, 10, 14, 16, 17, 20, 24, 25, 28, 29, 39, 42, 45
	6.2	Trigonometric Integrals and Substitutions	#2, 3, 4, 6, 16, 20, 32, 35, 43, 44, 46, 50, 53, 56, 70
	6.3	Partial Fractions	#7, 8, 9, 10, 14, 18, 24, 31, 38, 43
3	6.4	Integration with Tables and Computer Algebra Systems	#2, 4, 8, 12, 13, 21, 22
	6.5	Approximate Integration	#8, 9, 10, 13, 16, 18, 20
4	6.6	Improper Integrals	#2, 6, 7, 8, 10, 12, 13, 20, 27, 28, 32, 34, 42, 49, 54
	7.1	Area Between Curves	#2, 6, 7, 8, 10, 14, 16, 18, 32
	7.2	Volumes	#2, 3, 4, 6, 8, 9, 12, 24, 28, 32, 33, 36, 40, 41
5	7.3	Volumes by Cylindrical Shells	#3, 4, 5, 6, 10, 12, 16, 17, 29, 30, 36
	7.4	Arc Lengths	#8, 10, 11, 12, 16, 28, 31
6	7.5	Area of a Surface of Revolution	#5, 6, 8, 10, 12, 15, 20, 25
	7.6	Applications to Physics and Engineering	#6, 10, 12, 17, 34
	7.7	Differential Equations	#2, 4, 6, 10, 12, 22, 28, 43, 46
7	8.1	Sequences	#3, 9, 11, 15, 19, 23, 27, 29, 31
	8.2	Series	#5, 7, 9, 11, 15, 17, 19, 23, 27, 29
8	Exam 1		
9	8.3	The Integral and Comparison Tests	#6, 7, 8, 9, 10, 13, 15, 17, 21, 27, 31, 32
	8.4	Other Convergence Tests	#3, 5, 7, 21, 27, 29, 35, 37, 43
10	8.5	Power Series	#3, 4, 5, 9, 11, 15, 17, 21, 23, 25, 26, 32, 35, 36
	8.6	Representing Functions as Power Series	#3, 4, 5, 9, 10, 11, 15, 16, 19, 25, 27
11	8.7	Taylor and Maclaurin Series	#5, 6, 7, 11, 13, 17, 23, 31, 43, 44, 51, 61, 62
	8.8	Applications of Taylor Polynomials	#9, 10, 12, 13, 19
12	9.1	Parametric Curves	#1, 3, 9, 12, 13, 17, 19, 21, 22
	9.2	Calculus with Parametric Curves	#3, 4, 5, 9, 12, 21, 25, 27, 37, 38, 41
13	9.3	Polar Coordinates	#5, 6, 7, 9, 11, 13, 15, 17, 18, 25, 28, 31, 35, 47, 49
	9.4	Areas and Lengths in Polar Coordinates	#11, 15, 16, 19, 21, 23, 25, 31, 35
	9.5	Conic Sections in Polar Coordinates	#1, 2, 9, 10
14	Exam 2		
15	Review for Final Exam		