Math 182A 01 – Calculus II – Spring 2023

Erin Bela

Class time:	MWF 12:00–1:50 PM
Class location:	Thomas Gosnell Hall (GOS)-1305
Office:	HLC–2313 (Carey Building)
Office Hours:	Monday 10:30-11:30am, Tuesday* 12:00-2:00pm, Wednesday 4:30-5:30pm, or by Appointment
email:	esbsma@rit.edu
TA:	Carolina Estevez Loza

*Tuesday office hours will be held in the Bates Study Center (GOS-1200). All other office hours will be in my office.

Course Description

This is the second in a two-course sequence intended for students majoring in mathematics, science or engineering. It emphasizes the understanding of concepts, and using them to solve physical problems. The course covers techniques of integration including integration by parts, partial fractions, improper integrals, applications of integration, representing functions by infinite series, convergence and divergence of series, parametric curves, and polar coordinates.

Prerequisites

C- or better in MATH-181A or equivalent course.

Textbook

Calculus: Early Transcendentals, 9e, by James Stewart, Daniel K. Clegg, and Saleem Watson

If you took Calculus I at RIT, and have already purchased the text and multi-term WebAssign access, you should not need to purchase any additional materials for this course. If you do not already have multi-term WebAssign access, there are two main options for buying both the textbook and access to WebAssign.

Option 1: Purchase WebAssign access directly through Cengage. On myCourses, click on Content → WebAssign Access → Start Here. Select multi-term access ($82). This will give you access to all homework for this course as well as the eBook and Student Solutions Manual. If you do not see the correct purchase price, double check that you are logged into your RIT account. If you need additional help registering for WebAssign, please contact Cengage Technical Support using the link in the WebAssign access folder.

Option 2: Purchase the bundle from the bookstore which includes a Loose-Leaf Version of the textbook and multi-term WebAssign access (also includes eBook/student solutions manual). This option costs $142.78 (at time of writing).

If you are taking other courses which use Cengage textbooks, you may want to look into purchasing the Cengage unlimited subscription ($124.99) instead of one of the above options. More information about accessing WebAssign and the textbook can be found on the myCourses page for this course.

Calculators

Calculators are not permitted on quizzes, the three preliminary exams, or the final exam. You are encouraged to complete homework assignments and worksheets without a calculator *as much as possible* in order to prepare you for the quizzes and exams. That being said, there will be occasional problems you will encounter in class, on the homework, and in real-life, that require more complicated calculations and a calculator may be used as a tool in such cases. A basic scientific calculator (such as a TI-30X) will suffice, but you may also

use a phone or computer application (such as Desmos) when/if a calculator is required during workshops or on WebAssign homework assignments.

Desmos Scientific Calculator: https://www.desmos.com/scientific

Schedule

A detailed *tentative* schedule for this course can be found at the end of this syllabus.

Evaluation

Your grade in this course will be determined by the following assessments:

- Final exam – 20%
- 3 Preliminary Exams – 45%
- Quizzes – 10%
- WebAssign Homework – 10%
- Workshops – 15%

Grade cutoffs will be no higher than:

A	A-	B+	B	B-	C+	C	C-	D
93	90	87	83	80	77	73	70	60

Final exam

The final exam IS cumulative, though with an emphasis on the material which has been covered in the second half of the term. The final exam has a 2.5 hour time block. The first hour will be composed of 20-25 multiple choice questions (see topics below); these **Common Core** questions are the same across all section of 182 and 182A. The remaining 1.5 hours of the exam will be spent on questions specific to this section of Math 182.

Final exam time/location

Will be announced as soon as I am notified of the schedule. The calculus final is typically given on the first day of finals. There will be a review session on Reading Day (Tuesday, May 2).

Preliminary exams

Each of the preliminary (or 'midterm') exams will cover approximately 4 weeks of course content. While the preliminary exams are not cumulative, you should understand that every math exam you have ever taken builds upon previous material. These exams are no exception. The exams will be given in class on the following days:

- Friday, February 10
- Friday, March 3
- Friday, April 7

Topics for "Common Core" problems on the final exam

Note: This list is based on the Fall 2021 Common Core and may be modified slightly as more information becomes available.

- Rewriting an integral using u-substitution.
- Evaluate the indefinite integral of an algebraic function.
- Evaluate an indefinite integral using partial fraction decomposition.
- Evaluate an indefinite integral using integration by parts.
- Evaluate an indefinite integral using trig substitution
- Apply the trapezoidal rule to approximate a definite integral.
- Define a definite integral to represent the area between two curves.
- Compute a volume using a solid of revolution (disks/washers and cylindrical shells).
- Evaluate an improper integral.
- Compute the derivative of a parametrically defined curve.
- Graph of a function using polar coordinates.
- Compute the average value of a function.
- Determine the sum of a geometric series.
- Determine the convergence/divergence of sequences.
- Determine the area inside a polar curve.
- Identify the convergence/divergence of a series.
- Determine the radius of convergence of a power series.
- Calculate the terms of a Maclaurin series.
- Find the derivative of a power series.

WebAssign Homework

Each section of the textbook (e.g Section 7.1 - Integration by Parts) will have an accompanying WebAssign Homework assignment. These assignments will typically be due at 11:59pm TWO class periods after the material is finished being covered in class. For example, the first WebAssign homework will be due on Monday, January 23rd at 11:59pm and cover material from Wednesday's class (in this case - the substitution rule). In a typical week you can expect to have 2 or 3 homework assignments. I plan to post homework for the following week no later than the **end of the day on Friday** and all deadlines will be clearly visible when you login to WebAssign. You are encouraged to start on a section of homework as soon as it is covered in class.

There is a short (should take a maximum of ten minutes) "Getting Started with WebAssign" assignment that you should complete as soon as you register for WebAssign (but no later than Friday 1/20). More information on registering for WebAssign can be found on the myCourses page for this course.
Your *lowest two* homework scores will be dropped from your final grade.

Quizzes

There will be a quiz given in class each Friday (except for exam days and the first week of class). Each quiz will be based on the *previous week's* material. Your lowest quiz score will be dropped from your final grade.

Workshops

The second hour of class every Monday and Wednesday will be devoted to workshops. During workshop, you will break into groups of approximately 4 people. During workshop you are expected to work together through the worksheet. Your group is expected to write up full and detailed solutions. Please submit ONE worksheet per group and make sure that the names of ALL group members are written in the top right hand corner. Your workshop grade for the day will be determined as follows:

- Participation and Completion (50%): You will be graded on your contributions to your group and on how well you stay focused on the task. The expectation is that you give your best effort to complete all of the exercises (please ask questions if you are stuck), and are working the entire class period. Leaving early when you have not completed the day's assignment or turning in an incomplete worksheet will result in a loss of participation points.
- Complete and Correct Solutions (50%): Select problems will be chosen and graded for completeness and accuracy. Please show all work! Keep in mind that goal of the workshops is to give you extra practice and build the skills necessary to succeed in the course, so please give them all your best effort. You will not know in advance which problems will be selected for grading.

Your lowest 2 workshop grades will be dropped from your final score. There will be no make-ups for missed workshops due to unexcused absences.

Class Structure/Guidelines

The first half of class will typically consist of lecture and example problems. On Monday and Wednesday, the second half of class will be devoted to workshops. Friday's format will vary, but typically, except during exam weeks, we will use the second half of class for other activities, wrapping up the week's material, and quizzes.

Feel free to take a short break (approximately 5 minutes) between lecture and workshop. Food and drinks are allowed in class as long as it is not disruptive and you clean up after yourself. No nuts or peanuts are allowed in RIT classrooms for allergy reasons.

Successful Students Will

- Complete all of their WebAssign homework problems.
- Focus on their workshop during the workshop time.
- Use their homework, quizzes, and workshops, as well as additional provided review materials, to study for their exams.
- Seek help in office hours.
- Ask lots of question!

Attendance

Per SMS policy "In order to be eligible for a letter grade of A or B, students must have fewer than four unexcused absences from lecture, and fewer than four from workshop."

Your participation in class is vital to your success. I expect you to attend class regularly, be engaged in lecture, take notes, ask questions, and actively participate in all class activities.

Excused absences will be given at the instructor's discretion. Examples of excused absences include illness, family emergencies, or attending an RIT sponsored event. If you are unsure whether an absence will be

excused, the best policy is always to come and talk to me.

Regardless of your reason for missing class, I expect you to contact me (email is fine). I am happy to meet with you to go over material, but I would also encourage you to get the contact info of a classmate from whom you can obtain notes and discuss any material you missed.

Video or audio recording of lecture for personal use is permitted. Please refrain from video recording of other students or sharing these recordings with anyone outside of this class.

Academic dishonesty

As an institution of higher learning, RIT expects students to behave honestly and ethically at all times, especially when submitting work for evaluation in conjunction with any course or degree requirement. The Department of Mathematics encourages all students to become familiar with the RIT Honor Code and with RIT's Academic Integrity Policy.

RIT Honor Code: https://www.rit.edu/academicaffairs/policiesmanual/p030

RIT Academic Integrity Policy: https://www.rit.edu/academicaffairs/policiesmanual/d080

During exams I will offer minimal assistance; giving only clarifying comments, I will provide no hints or suggestions. Calculators are NOT PERMITTED during exams or quizzes. Additionally, no books or notes will be allowed on exams or quizzes. Cell phones and any other wireless device must be turned off and put away during exams. Any attempt at cheating on an exam will result in failing the course, and the matter will be forwarded to the Dean.

Academic Adjustments

RIT is committed to providing academic adjustments to students with disabilities. If you would like to request academic adjustments such as testing modifications due to a disability, please contact the Disability Services Office. Contact information for the DSO and information about how to request adjustments can be found at https://www.rit.edu/dso. After you receive academic adjustment approval, it is imperative that **you contact me as early as possible** so that we can work out whatever arrangement is necessary. Students receiving extra time on exams are strongly encouraged to schedule their exam with the university test center.

Sick Policy

While regular attendance is important, please stay home if you have a fever or if you are experiencing any COVID-19 symptoms (same applies to the flu and other contagious viruses). Any student missing more than a day of class due to any illness are encouraged to contact me to set up a Zoom appointment so we can make a plan to get you caught up on the material.

Wellness

Mental health issues ebb and flow depending on current life events, and often surface at this time in life as young people encounter new complexities and stresses, sometimes without immediate support for the first time. This can be deeply frightening, or at least confusing. First and foremost, know that you are not alone. If you are feeling overwhelmed, if you experience what seems like depression or anxiety, or if you are feeling victimized in any way, RIT has people to help you. The most effective way to manage these challenges and minimize the effect on your work and personal life, is to recognize and talk about them before they become more intense. Please feel free to let me know if you need assistance connecting to services. For counseling and psychological services, click on the URL below:

https://www.rit.edu/studentaffairs/counseling/

During business hours (Monday-Friday, 8:30 am—4:30 pm), you can walk-in (2100 August Center above the Student Health Center), or call (585) 475-2261, or email caps@rit.edu to schedule an appointment. For urgent matters, Counseling and Psychological Services takes walk-ins without an appointment during business hours. For urgent matters that cannot wait for business hours, call 1-855-436-1245 to speak with a mental health provider or call Public Safety at 475-3333.

Students experiencing mental health concerns significantly impacting their attendance or academic performance are strongly encouraged to reach out to the DSO office as well as the university counseling center.

Title IX

Title IX violations are taken very seriously at RIT. RIT is committed to investigate complaints of sexual discrimination, sexual harassment, sexual assault and other sexual misconduct, and to ensure that appropriate action is taken to stop the behavior, prevent its recurrence and remedy its effects. Please view the Title IX Rights & Resources at RIT. More information will be linked in the **Student Resources** folder on myCourses.

Please be aware that I am a mandatory reporter, and as such, am required by law to report sexual misconduct to the Title IX office. Every effort will be made to protect your privacy and confidentiality, to the greatest extent possible, while balancing our collective efforts to make our campus a safer place for everyone.

Policy changes

I reserve the right to change any policy I feel necessary during the semester. Any policy change will be announced in class and on myCourses. A tentative schedule for the term is included on the next page.

Schedule

Week of	**Monday**	**Wednesday**	**Friday**
1/16	No Class (MLK Day))	The Substitution Rule (5.5)	Integration by parts (7.1)
1/23	Trig Integrals (7.2)	Trig Substitution (7.3)	Trig Substitution (7.3)
1/30	Partial Fractions (7.4)	Partial Fractions (7.4)	Strategy for Integration (7.5)
2/6	Approximate Integration (7.7)	Review/Catch-up Day	Exam 1
2/13	Area between curves (6.1)	Volumes (6.2)	Volumes by shells (6.3)
2/20	Extra day on volumes	Average Value (6.5)	Arclength (8.1)
2/27	Additional Applications (TBD)	Review/Catch-up Day	Exam 2
3/6	Improper integrals (7.8)	Improper integrals (7.8)	Sequences (11.1)
3/13	Spring Break	Spring Break	Spring Break
3/20	Sequences (11.1)	Series (11.2)	Series (11.2)
3/27	Integral test (11.3)	Comparison tests (11.4)	Alternating Series Test (11.5)
4/3	Ratio and Root Test (11.6)	Review Day	Exam 3
4/10	Power Series (11.8)	PS as Functions (11.9)	Taylor/Maclaurin Series (11.10)
4/17	Taylor/Maclaurin series (11.10)	Parametric curves (10.1)	Calc of parametric curves (10.2)
4/24	Polar coordinates (10.3)	Polar coordinates (10.3)	Calc of polar coordinates (10.4)
5/1	Final exam review	Final exam	No class