

152: Calculus 2 Syllabus

Summer 2019 | Section C7

Instructor Information

Instructor

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Email

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Office Location & Hours

Location TBD, 9-10am and 12:10 – 1:10pm, Monday-Thursday

General Information

Course Description

Math 151-152 is the introductory year course in the calculus sequence in New Brunswick for majors in the mathematical sciences, the physical sciences, and engineering. The second semester (Math 152) picks up where Math 151 left off; it continues the study of the integral calculus, with applications, and covers the theory of infinite series and power series, touching on a few other topics as well.

Additionally, this course will use Canvas, rather than Sakai. To access this course page, visit canvas.rutgers.edu and log in using your NetID and password.

Official Course Textbook: Calculus, Early Transcendentals, third edition, by Jon Rogawski, and Colin Adams; ISBN-10: 1-319-05074-3; ISBN-13: 978-1-319-05074-0

This class meets Monday -Thursday, 10:10am – 12:10pm in BRR-5073.

Course Learning Goals

1. To acquire practice using the method of disks, washers and cylindrical shells to compute volumes of solids of revolution.
2. To develop the ability to use integration by parts, trigonometric substitution, partial fractions and other techniques to evaluate many indefinite integrals.
3. To acquire practice using the integral test, comparison tests, the Leibniz test and the ratio test to determine convergence or divergence of a series.
4. To acquire practice solving problems involving parametric equations and polar coordinates.
5. To learn polar and exponential form of complex numbers and find roots of complex numbers.

Math Department Links

- Course Page: <http://www.math.rutgers.edu/academics/undergraduate/courses/942-01-640-152-calculus-ii-for-the-mathematical-and-physical-sciences>
- Course Topics: <https://www.math.rutgers.edu/academics/undergraduate/course-pages/course-materials/1209-152-fall-2018-syllabus-hw>

Prerequisite

CALC1, or appropriate placement. (See this page of the Rutgers Course Catalog for the meaning of “CALC1”: http://catalogs.rutgers.edu/generated/nb-ug_0507/pg20606.html). Note that students taking this course after taking Math 135 may require some additional self-study; See the details here: <http://www.math.rutgers.edu/courses/151-152/>.

SAS Core Curriculum Learning Goals

- **QQ:** Formulate, evaluate, and communicate conclusions and inferences from quantitative information.
- **QR:** Apply effective and efficient mathematical or other formal processes to reason and to solve problems.

Flipped Format

This class is going to be run in a **flipped** model. To understand what that means, we first have to point out specific aspects of the traditional classroom.

In a traditional model, students typically first encounter a concept during lecture, where their instructor will introduce the topic and give some examples. The students will then go home to work on problems on their own to practice and deepen their understanding. If students run into questions while working on these problems, they have to email their instructor, go to office hours, find tutoring, or turn to less ideal resources such as Chegg.

A flipped model turns that sequence on its head. Students first encounter a concept *before* class, often through videos, readings, worksheets, discussion boards, etc. When they arrive in class, they are actively working on problems *while the instructor is there to answer questions*. Often there are some additional problems for the students to complete after class to solidify the understanding gained during class.

For a nice discussion of flipped classrooms and self-regulated learning (a concept related to flipped classrooms) listen to this podcast: <https://teachinginhighered.com/podcast/self-regulated-learning-flipped-classroom/>

Statement on Diversity

*“The first question is: Can learning take place if in fact it silences the voices of the people it is supposed to teach?
And the answer is: Yes. People learn that they don’t count.”*

--Henry Giroux, Border Crossings: Cultural Workers and the Politics of Education

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, ability, age, socioeconomic status, ethnicity, religion, race, and culture. To help accomplish this, I make the following commitments.

- All people have the right to be addressed and referred to in accordance with their personal identity. In this class, we will have the chance to indicate the name that we prefer to be called and, if we choose, to identify pronouns with which we would like to be addressed. I will do my best to address and refer to all students accordingly and support classmates in doing so as well.
- If you feel that your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me. I want to be a resource for you. The Canvas page will also include a tool to submit anonymous feedback.
- I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it. (Again, anonymous feedback is always an option).

Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups.

Rutgers University Office of Diversity and Inclusion: <https://odi.rutgers.edu/>

Rutgers University Cultural Collaborative: <http://culturalcollaborative.rutgers.edu/>

Rutgers University Office of Disability Services: <https://ods.rutgers.edu/>

Academic Integrity

Copying, collaborating, and getting help are all very different things. Understanding the distinctions is crucial for students in this and all other university classes.

Copying means taking work from the internet (including anything on Chegg), another student, or any other source at face value and submitting it as your own. Copying constitutes a violation of the academic integrity policy and will be reported to the proper Rutgers offices.

Collaborating means working with classmates on a problem assigned as group work, such as workshops. Students might also collaborate while working through the online homework. In fact, in this class you will spend a lot of time working in groups. However, you will still receive your own grade for the course and will therefore need to do your own work. So, how do you know when the group work must stop, and the individual work begins? Follow the “**Sauna Rule**”: If you work out problems with other students, do not copy the answers. Instead, go take a 30-minute sauna, and then write up the answer on your own without the aid of group work. Copying work that is not yours is plagiarism, even if the work was done as part of a group discussion of a problem.

Getting help from someone who is more familiar with the material than you are **may also constitute copying**. Of course, if you come to office hours or ask me (the instructor) questions, I know what level of help you’ve received and can structure the conversation to avoid the question of plagiarism. If, however, you get help from a tutor (including online tutoring platforms like Chegg), a friend, or anyone else that isn’t the instructor of this course, you should again follow the Sauna Rule to avoid potential violations of the academic integrity policy.

If at any point you have questions about academic integrity and the policies enforcing it, please don’t hesitate to ask. You should also familiarize yourself with the official Rutgers policy:

<http://academicintegrity.rutgers.edu/academic-integrity-policy>

Course Components

Homework

Homework in this class will be through a new program called Sapling plus, which a few sections (including this one) are piloting this summer. Although Sapling is tied to the fourth edition of the textbook, students may use the third edition of the textbook. More details on registering with Sapling will be sent to students and posted on the Canvas site. All assignments and their due dates will be posted on Canvas.

Because this class is flipped, there are two types of homework:

Pre-Class Homework

Each class day (except exams) has an assignment in Sapling that students must complete before class. The assignments can be found on Canvas and are due at 8am on the day of class. These assignments include a few brief videos on the day’s topics and a couple of simple homework exercises to practice. For the pre-class homework, you are not penalized for incorrect attempts. This assignment is designed to introduce the major ideas and help you prepare for class, where we will work to deepen your understanding. Additionally, these pre-class assignments will often include review material, especially material that is needed for that day’s class. No late pre-class homework will be accepted.

Post-Class Homework

Although in-class time will be spent on additional practice, it is important for students to practice on their own to help commit concepts to long-term memory and to identify persistent misunderstandings. So, students will have an assignment in Sapling after each course day, which is due at the end of that week. Because this is the third round of problems on a given topic, the grading is more strict than that for pre-class homework: each incorrect attempt is penalized 5/100 points for that problem.

All post-class assignments for a given week will be due that Friday at 11:59pm. If students do not complete the assignments by Friday, they may submit it by Sunday at 11:59pm with a 10% penalty per day.

Quizzes

Each class day will include a short (10-15 minute) quiz. In some cases, these quizzes will be at the start of class, especially on those days when the pre-class assignment is mostly review of prerequisite material. In some other cases, the quiz will take place part of the way into class. The quizzes will be graded with partial credit similarly to the way exams will be graded. At the end of the semester, the two lowest quiz grades will be dropped. No makeup quizzes will be offered.

Workshops

One of the goals of this course is for students to practice the skill of communicating about technical and abstract concepts and to practice making mathematically precise arguments. To that end, the last 40 minutes of each class is dedicated to working on problems/worksheets that require more explanation and reasoning than is emphasized in the online homework. These worksheets are called workshops. In addition to helping students practice their written mathematical communication skills, workshops help students to develop deeper understanding of the concepts that are the main topics of this course.

Students will be required to scan and upload their completed workshops (as a PDF) by midnight on the day they are assigned. All on-campus libraries have scanners (<https://www.libraries.rutgers.edu/print-scan-copy>), or students may choose to use a scanning app on their phone. Alternatively, students may choose to download the blank workshop PDF and edit directly on a computer using any PDF-editing software.

At the end of the semester, the two lowest workshop grades will be dropped. Late workshops will not be accepted, except in extenuating circumstances.

Exams

This course has three exams: two midterms and a final.

Midterm Exams

Each midterm will be 80 minutes long during the normal class meeting time in the normal classroom and will count for 18.75% of the total final grade. Exams are closed book. No calculators or formula sheets will be permitted. The dates of the exams are listed in the course calendar below.

Final Exam

There will be one final exam that will be 3 hours long on the last day of class. The exact time and location will be announced later in the course. If you have another course that meets on that day, please let me know as soon as possible in order to avoid a time conflict. The exam is closed book. No calculators or formula sheets will be permitted. The final exam will be cumulative, covering all material from the entire course.

Missing Exams

An exam that is missed without a documented excuse for a justifiable reason will receive a score of zero. If a student must miss an exam, the student should notify the instructor by email before the exam. In general, documentation from a doctor, court of law, funeral home, etc., is required. I will also make accommodations if exams conflict with religious holidays, but students should let me know of any such conflicts **as soon as possible**, so reasonable arrangements can be discussed. In any case, the student should make arrangements to take the exam at the earliest possible opportunity. If it is not possible to make up an excused exam within a reasonable time, the instructor (within her sole discretion) may determine to count portions of the final exam covering the same material in place of the missed exam. Note that, as a matter of math department policy, the final exam cannot be excused; you must take the final exam.

Grade Breakdown

The following table demonstrates how each component of the course is combined into the final, total grade at the end of the course. These grade breakdowns are determined by departmental policy.

Component	Percent of Total
Final Exam	37.5%
Exam 1	18.75%
Exam 2	18.75%
Quizzes	10%
Sapling Homework	7.5%
Workshops	7.5%
Total	100%

Course Schedule

Monday	Tuesday	Wednesday	Thursday
27 May Memorial Day: No Classes	28 Intro to the Course and 151 Review	29 Density and Average Value	30 Volume by Slicing and Disc/ Method
3 June Cylindrical Shells	4 Arc Length and Surface Area	5 Integration by Parts and U-Substitution	6 Trigonometric Integrals
10 Trigonometric Substitution	11 Integrals involving hyperbolic and inverse hyperbolic functions	12 Partial Fractions	13 Choosing an Integration Strategy
17 Exam 1 And Zeno's Paradox	18 Improper Integrals	19 Numerical Integration	20 Sequences
24 Introduction to Series	25 Convergence of Series with Positive Terms	26 Absolute and Conditional Convergence	27 Ratio and Root Tests and Strategies for Choosing Tests
1 July Power Series	2 Taylor Polynomials	3 Taylor Series	4 No Classes
8 Exam 2 And Algebra with Complex Numbers	9 Parametric Equations	10 Parametric Arc Length and Speed	11 Polar Coordinates
15 Area and Arc Length in Polar Coordinates	16 Complex Numbers	17 Final Exam Review	18 Final Exam

Student Wellness Services

Just In Case Web App

<http://codu.co/cee05e>

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901 / <http://health.rutgers.edu/medical-counseling-services/counseling/>

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Scarlet Listeners

(732) 247-5555 / <https://rutgers.campuslabs.com/engage/organization/scarletlistenersh>

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Report a Concern: <http://health.rutgers.edu/do-something-to-help/>