

The George Washington University
Department of Mathematics
Math 1232-11 (CRN 30226): Single-Variable Calculus II
Spring 2018
MW 09:35 – 10:50am
[PHIL](#) B152

Instructor

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Mathematics department

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Office Hours: Tu and Th 2:00–3:30pm
At other times by appointment.

Recitations: Fridays

Must register for one recitation section:

Section 33 (CRN 32172), F 8:00–8:50am, 1957 E Street, Room 314

Section 34 (CRN 32173), F 9:35–10:25am, Phillips Hall (801 22nd Street), Room 108

Section 35 (CRN 32174), F 11:10am–12:00noon, Rome Hall (801 22nd Street), Room 206

Textbook

Calculus by James Stewart, **8th edition**, Cengage Learning, 2016.

Prerequisite

Math 1231: Single Variable Calculus I, or Math 1221: Calculus with Precalculus II.

Course outline

Chapter 6. *Inverse functions; their derivatives and integrals*

Sections 1–8. Exponential and logarithmic functions. Inverse trigonometric functions. Hyperbolic functions. L'Hospital's rule.

Chapter 7. *Techniques of integration*

Sections 1–5, 8. Integration by parts. Trigonometric substitution. Integration of rational functions. Improper integrals.

Chapter 11. *Infinite sequences and series*

Sections 1–10. The integral test. The comparison tests. Alternating series. The ratio test and the root test. Power series. Taylor and Maclaurin series.

Chapter 10. Sections 1–4. *Parametric curves and polar coordinates*

Chapter 8. Sections 1–2. *Arc length. Area of a surface of revolution*

Learning goals

As a result of completing this course students should be able to:

1. Understand and find inverse functions of given invertible functions;
2. Find derivative and integrals of functions involving exponential, logarithmic and trigonometric functions;
3. Apply the method of trigonometric substitution and the method for rational functions to evaluate integrals;
4. Demonstrate how the integration-by-parts method is used to compute given integrals;
5. Apply various tests to determine whether a given series converges;
6. Compute Maclaurin and Taylor series;
7. Explain and solve real-life problems using polar coordinates and parametric curves.

Homework

Regular on-line assignments will be given via the web-based homework management system known as WebAssign. Register at www.webassign.net and use the class key:

gwu 56186915

All homework needs to be completed electronically on schedule. **No late homework** will be accepted for any reason. Working in groups to discuss homework problems is not only permitted but is encouraged. However, the final submitted answers must be your own work, composed by you without copying from any source.

Grading

Final Exam (cumulative two-hour exam): 35%

The final exam will be scheduled by the University during the final exam period.

Midterm Exam (given and returned in class), Wednesday, February 28, 2018: 20%

Homework: 15%

Quizzes (given and returned in recitations): 30%

Quiz #1, Friday, February 2, 2018: 6%
Quiz #2, Friday, February 16, 2018: 6%
Quiz #3, Friday, March 23, 2018: 6%
Quiz #4, Friday, April 6, 2018: 6%
Quiz #5, Friday, April 20, 2018: 6%

For letter grades: 90% will be at least A-, 80% will be at least B-, 65% will be at least C-, and 50% will be at least D-.

Tentative schedule of lectures

January 17: Section 6.1. Course preview. Inverse functions
January 22: Section 6.2. Exponential functions and their derivatives
January 24: Section 6.3. Logarithmic functions
January 29: Section 6.4. Derivatives of logarithmic functions
January 31: Sections 6.6 and 6.7. Inverse trigonometric functions. Hyperbolic functions
February 5: Section 6.8. Indeterminate forms and l'Hospital's rule
February 7: Section 7.1. Integration by parts
February 12: Section 7.2. Trigonometric integrals
February 14: Section 7.3. Trigonometric substitution
February 19: Holiday – President's Day
February 21: Section 7.4. Integration of rational functions by partial functions
Section 7.5: Strategy for integration (not covered in class explicitly; it is your responsibility to read and understand this section)
February 26: Review
February 28: **Midterm exam**
March 5: Midterm exam analysis and Section 7.8. Improper integrals
March 7: Section 7.8. Improper integrals
March 12–16: Spring break
March 19: Section 11.1. Sequences
March 21: Sections 11.1 and 11.2. Sequences. Series
March 26: Section 11.3. The integral test and estimates of sums
March 28: Sections 11.4 and 11.5. The comparison tests. Alternating Series
April 2: Section 11.6. Absolute convergence, and the ratio and root tests
Section 11.7: Strategy for testing series (not covered in class explicitly; it is your responsibility to read and understand this section)
April 4: Sections 11.8 and 11.9. Power series. Representation of functions as power series
April 9: Section 11.10. Taylor and Maclaurin series
April 11: Section 8.1. Arc length
April 16: Section 8.2. Area of a surface of revolution

April 18: Sections 10.1 and 10.2. Parametric equations. Calculus with parametric curves

April 23: Section 10.3. Polar coordinates

April 25: Section 10.4. Areas and lengths in polar coordinates

April 30: Review

Attendance/Absence policy

Students are expected to attend all lecture and recitations, and are responsible for learning all material covered in lectures and recitations.

If you must be away from class on a given day on which there is a quiz or an exam, please contact us before the class and explain the need for your absence. In such a situation, your absence can be excused, although there **will not be any opportunities to make-up missed quizzes**. Work missed owing to excused absence will not count against a student's grade. (Still, students are responsible for learning the material that is covered, even if they cannot be in class.)

Cell/smart phones, laptops, ipads

All such potentially distracting devices must be turned off during class. During the tests, all such devices, as well as calculators, notes, books and all other possible forms of assistance, must be in closed bags. However, computers and calculators may be used to do homework problems.

Work outside class

More than 2/3 of the time you devote to this class should take place outside the classroom (lectures and recitations). Even the best students in the class should plan on spending an average of at least 6 hours a week on homework and other studying. Many students may need to spend more time in order to master the material and earn a grade they will find acceptable.

Blackboard

Announcements, past tests, and other learning material or relevant information will be posted on blackboard: <https://blackboard.gwu.edu/>

Use your Net Id and password to access blackboard.

Academic integrity code

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For the remainder of the code, see:

<https://studentconduct.gwu.edu/code-academic-integrity>

Support for students outside the classroom

Academic support services: <https://advising.columbian.gwu.edu/academic-support>

Disability student services

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in Rome Hall, Suite 102,

to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: <https://disabilitysupport.gwu.edu/>

Mental health services: 202–994–5300

The University's Mental Health Services offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations, confidential assessment, counseling services (individual and small group), and referrals: <https://healthcenter.gwu.edu/mental-health>

University policy on religious holidays: <http://students.gwu.edu/accommodations-religious-holidays>

Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.

Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.

Emergency preparedness: www.gwu.edu/~gwalert