

SYLLABUS

Math 412-M002 Introduction to Real Analysis I Fall 2017

Instructor: Jeffrey L. Meyer; 206F Carnegie, 443-1479, 443-1473, jlmeye01@syr.edu

Office Hours: TTh 12:45 - 1:45 pm, W 9:30-11:00 am, and by appointment.

Text: *An Introduction to Analysis*, by W.R. Wade, Prentice Hall, 4th edition.

Class Time and Room: TTh 9:30 -10:50 am, Room 219 Carnegie.

Course Description: Introduction to the foundations of calculus covering topics from the following: the real number system, functions, limits, sequences, infinite series, continuity, and uniform continuity. Enrollment limited to mathematics majors. PREREQ: ([MAT 375](#) OR [CIS 375](#)) AND [MAT 397](#).

Course Content: Chapters 1-4: Real numbers, sequences, functions, differentiability. An approximate order of events is:

- **Chapter 1** Some of this was covered in MAT 375. What is new is the real numbers as a complete ordered field (Sections 1.2 and 1.3). You are responsible for learning or recalling the rest of the material in Chapter 1.
- **Chapter 2** Sequences, Bolzano-Weierstrass theorem, Cauchy sequences (Sections 2.1-2.4).
- **Chapter 3** Limits of functions, Continuity, Uniform Continuity (Sections 3.1-3.4).
- **Chapter 4** Derivatives, Mean Value Theorem, Taylor's Theorem, L'hoptial's rule, Inverse function theorem (Sections 4.1-4.5).

Learning Goals:

- Understand the nature and role of deductive reasoning in mathematics.
- Use and understand the usage of mathematical notation.
- Follow proofs and other mathematical discourse.
- Write rigorous proofs of mathematical statements.

Course Grade: There will be two one-hour exams during the semester (each worth 25% of the course grade) and a cumulative final exam (worth 30% of the course grade). Also, there will be several equally-weighted problem sets which will be collected and graded. One homework score is dropped. Homework is worth 20% of the course grade. Class attendance is required.

Exams:

1. Exam Dates (tentative):

Exam 1 - Thursday, October 5, 2017

Exam 2 – Thursday, November 16, 2017

Final Exam – Friday, December 15, 2017, 5:15 – 7:15 pm (*not tentative!*)

2. There will be no makeup exams. In case of a missed exam with a valid and verifiable reason, the relevant portion of the comprehensive final is used to determine the missing exam score.

Homework: There will be several problem sets assigned during the semester. You may work with others on the homework, but you must write up your own solutions and you are responsible for your solutions. **Homework is due at the beginning of class.**
Homework is not accepted late.

Phone, Laptop, Tablet in class policy: Phones, laptops, and tablets are not allowed to be out during class. Students who repeatedly violate this policy will be asked to leave the room.

Academic Integrity: Syracuse University's Academic Integrity Policy reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. SU students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice. The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level. *The use of or availability of any electronic device during a midterm exam or final exam is a violation of the Academic Integrity Policy.* For more information about the policy, see <http://academicintegrity.syr.edu>.

Religious Observances Policy: Syracuse University's religious observances policy, found at http://supolicies.syr.edu/emp_ben/religious_observance.htm, recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that maybe missed due to a religious observance provided they notify their instructors before the end of the second week of classes. For fall and spring semesters, an online notification process is available through MySlice/Student Services/Enrollment/My Religious Observances from the first day of class until the end of the second week of class.

Students with Disabilities: If you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible.