Math 421 Syllabus

The theory of single variable calculus

COURSE INFORMATION

The theory of single variable calculus
MATH 421 003 (3 Credits)
Fall 2018-2019 [1184]

Description: One variable calculus with proofs.
Prerequisite(s): MATH 234
Breadths: N - Natural Science
Instruction Mode: Classroom Instruction

Department: MATHEMATICS
College: Letters and Science

Location and Schedule: Van Vleck Hall B239, MWF 12:05PM-12:55PM.

How the Credit Hours are Met:
[Traditional Carnegie Definition] This class meets for three 50-minute class periods each week over the semester and carries the expectation that students will attend class and work on course learning activities (reading, writing, problem sets, studying, etc) for at least two hours out of classroom for every class period. The syllabus includes additional information about meeting times and expectations for student work.

Instructor:	Prof. Andreas Seeger	`seeger@math.wisc.edu`, 613 Van Vleck
	Office hours	Mo 9:50-10:50, Tu 3:00-3:50
Teaching Assistant:	Changkeun Oh	`coh28@wisc.edu`, 816 Van Vleck
	Office hours	Tu, Th 10:30-11:30, also available Mo 3:30-5:10 in the Mathlab.

Expected course learning outcomes. Students will learn the theory of single variable calculus. They will learn to construct and write proofs.

Textbook. Calculus, by Michael Spivak.

Homework. Assigned weekly. Assignments will be sent to the classlist at `math421-3-f18@lists.wisc.edu` Homework will be graded for completion, with one or more problems graded for correctness. Working out the homework problems will be key for your exam preparation. Homework is meant to be challenging and to push you to learn the material in depth. Try hard enough to solve the problems on your own using only the course notes and your own lecture notes. Students must submit their own written version of the homework solutions. Homework will be usually be collected at the beginning of the lecture on the date when it is due. We do not accept late submissions and submissions by email.

- Students may discuss the material with others and consult other sources but *must specify their collaborators and all sources on each homework*, including other textbooks and information found on websites. Failure of doing so is considered academic misconduct.

Exams. The time of the two midterm exams will be announced in class and by email at least two weeks prior to the date of the exam. Books, notes, calculators, phones, will not be allowed during exams.

Grading. The grade will be determined according students' performance on homework (≈10%), the two midterm exams (≈25% each), and the final exam (≈40%).

Preparation: Students are expected to review chapters 1, 3, 4 in Spivak's book.

Outline of topics:

§2. Methods of proof: Direct proofs. Proof by contradiction. Proof by induction.
§3-4. Quick review on functions and graphs.
§5. Limits
§6. Continuous functions
§7. "Three hard theorems".
§9. Derivatives.
§10. Differentiation.
§11. Significance of the derivative (selected topics).
§12. Inverse functions.
§13. Integrals.
§14. The fundamental theorem of calculus.
§20. Approximation by polynomials.
Additional topics, if time permits.

SELECTED UW ACADEMIC POLICIES

ACADEMIC INTEGRITY
By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to https://conduct.students.wisc.edu/academic-integrity/

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES
McBurney Disability Resource Center syllabus statement: "The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php

DIVERSITY & INCLUSION
Institutional statement on diversity: "Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world." https://diversity.wisc.edu/