Course Subject, Number and Title
MATH 521 – Analysis I

Credits
3

Course Designations and Attributes
Breadth - Natural Science
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Honors - Honors Optional (%) Course

If you are taking this course for Honors, you will some extra problems on the homework assignments, some more reading assignments on which you are expected to give a short 5 min presentation at the end of the course.

Meeting Time and Location
Monday, Tuesday, Wednesday, Thursday 10:20AM - 11:35AM

Instructional Mode
Online

Credit Hour expectations
This class meets for four 75-minute class periods each week over the summer semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 2 hours out of classroom for every class period. The syllabus includes more information about meeting times and expectations for student work.

INSTRUCTORS AND TEACHING ASSISTANTS
Instructor Title and Name
Siddhesh Wagh, Visiting Assistant Professor

Instructor Availability
Monday 4:00 to 5:00 p.m., Tuesday 1:00 to 2:00 p.m., Wednesday 4:00 to 5:00 p.m., Thursday 1:00 to 2:00 p.m., or by appointment.
Instructor Email/Preferred Contact
Van Vleck B127,
wagh2@wisc.edu
Allow me 24 hours to answer your email. After that, there is a good chance that I saw your email on my phone, decided to answer when I got to a computer, then forgot because it was marked as read. In that case, please send it again.

OFFICIAL COURSE DESCRIPTION
Official Course Description
The real numbers, elements of set theory, metric spaces and basic topology, sequences and series, limits, continuity, differentiation, integration, sequences and series of functions, uniform convergence. Enroll Info: None

Requisites
MATH 322, 341, 376, or 421 or graduate/professional standing or member of the Pre-Masters Mathematics (Visiting International) Program

LEARNING OUTCOMES
Course Learning Outcomes
- Recall and state the formal definitions of the mathematical objects and their properties used in ordinary differential equations (e.g., systems of differential equations, dependence on initial conditions, exponentials of matrices, Lyapunov functions, etc.).
- Use such definitions to argue that a mathematical object does or does not have the condition of being a particular type or having a particular property (e.g., that a function is a solution to an ode, local and global stability of an equilibrium, that an initial value problem has a unique solution, etc.).
- Recall and state the standard theorems of ordinary differential equations (e.g., the existence and uniqueness theorem, Hartman-Grobman theorem). Moreover, recall the arguments for these theorems and the underlying logic of their proofs.
- Use such theorems in the context of longer arguments by examining their premises (e.g., differentiable dependence upon initial conditions, checking stability via Lyapunov functions, etc.).
- Prove or disprove statements related to the above definitions, properties, and theorems using techniques of mathematical argument (direct methods, indirect methods, constructing examples and counterexamples, etc.).
- Convey arguments in oral and written forms using English and appropriate mathematical terminology, notation and grammar.
- Identify applications of course content in current areas of research. (GRAD)

GRADING
Your course grade will be determined approximately as follows:
- Homework assignments, worth 20% of the final grade.
- 2 Midterm exams, worth 25% of the final grade each.
- Final exam, worth 30% of the final grade.
The following scores correspond to the guaranteed grades in this course. The scores may be lowered at the end of the semester by the instructor.

- A ≥ 93% > AB ≥ 89% > B ≥ 82% > BC ≥ 78% > C ≥ 70% > D ≥ 60% > F.

### REQUIRED TEXTBOOK, SOFTWARE & OTHER COURSE MATERIALS

**Principle of Mathematical Analysis, by W. Rudin**


### EXAMS, QUIZZES, PAPERS & OTHER MAJOR GRADED WORK

The midterm exams will be held during class time on Monday, July 6 and Monday, July 27. The final exam is cumulative and will be held during class time on Thursday, August 6, 2020. Alternate time slot will be available for these for students who are unable to take the exam during class time.

Barring exceptional circumstances, such as a conflict with an official University-related event or a last-minute medical/family emergency, these assessments must be taken at the scheduled date and time.

### HOMEWORK & OTHER ASSIGNMENTS

Homework will be due every week on Sunday 11:59 PM, except exam weeks which will have no Sunday homework due on July 5 and July 26. Homework must be submitted to Gradescope in acceptable format.

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.

### OTHER COURSE INFORMATION

For Honors students, the 5 min presentation would count for 5% of your grade, with the weightage for midterms shifted to 23% each and final exam at 29%.

### RULES, RIGHTS & RESPONSIBILITIES

- To see the Guide’s Rules, Rights and Responsibilities information, refer to [http://guide.wisc.edu/undergraduate/#rulesrightsandresponsibilities](http://guide.wisc.edu/undergraduate/#rulesrightsandresponsibilities).

### 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 studentconduct.wiscweb.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](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/](https://diversity.wisc.edu/)