

# Syllabus for Real Analysis

Math 501, Fall 2018

MWF, 11:10am-12pm, SPRK 233

Instructor: Prof. Xueying Wang  
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Webpage: <https://learn.wsu.edu/webapps/login/>

## Course

**Course Description:** Math 501 is a graduate level course in mathematical analysis. The class deals with convergence of sequences and series, continuity, differentiability, Riemann integral, sequences and series of functions, uniformity, and the interchange of limit operations. The main goal of the course is for students who pursue advanced studies in mathematics and related fields to lay a solid foundation in mathematical analysis. We will cover chapters 2-9 in the textbook.

**Learning Outcomes:** After completing this course, students are expected to achieve the following abilities:

- Understand definitions and fundamental theorems and be able to describe them in detail;
- Prove convergence and divergence of limits using the  $\epsilon - \delta$  definition;
- Conduct rigorous proofs concerning differentiation and integration of real-valued functions in metric spaces.

**Required text:** *Principles of Mathematical Analysis* by Walter Rudin (ISBN: 9780070542358, 3<sup>rd</sup> Edition).

**Important course information and updates/modifications to the course schedule are kept current on the web:**

<https://learn.wsu.edu/webapps/login/>

## Grades

The course grades will be assessed through weekly assignments, class presentations, three comprehensive examinations weighted as follows:

Homework	20%	~ every week	A = 90-100%, A- = 88-89%
Exam 1	20%	September 28 (Friday)	B+ = 84-87%, B = 80-84%, B- = 78-80%
Exam 2	22%	October 26 (Friday)	C+ = 74-77%, C = 70-74%, C- = 68-70%
Exam 3	30%	November 30 (Friday)	D+ = 64-67%, D = 60-64%
Presentation	8%	~ every week	F = 0-59%

**Bonus points:** Students can earn bonus points. Each bonus point adds 0.1% to the final grade. One may earn a maximum of 50 bonus points over the duration of the course (i.e., the theoretical maximum score for the class is 105%). There will be plenty of opportunities to obtain bonus points in this class. One can earn a bonus point whenever you have a good suggestion to make or find an error in any of lectures, homework, exams, solutions, or class web page materials.

**Homework:** A thorough understanding of the assignments handed in is essential for doing well in the course. Please turn in your homework and lab assignments in class on the designed due date. **No late homework will be accepted.** It is important that you *show all the necessary work* in your solutions.

**Absences:** No compensation for missed examinations will be considered unless *prior approved* arrangements have been made.

If you miss a lecture, you are responsible for obtaining lecture notes from another student. You are also responsible for determining if any announcements were made.

**Americans with Disabilities Act (ADA) notice:** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations **MUST** be approved through the Access Center. For more information contact a Disability Specialist at [Access.Center@wsu.edu](mailto:Access.Center@wsu.edu) or visit the webpage: <http://accesscenter.wsu.edu>.

**Campus Safety:** Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (<http://safetyplan.wsu.edu/>) and visit the Office of Emergency Management web site (<http://oem.wsu.edu/>) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

**Academic integrity:** Academic integrity will be strongly enforced in this course. Any student caught cheating on any assignment will be given an F grade for the course and will be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions.

I encourage you to work with classmates on assignments. However, each student must turn in original work. No copying will be accepted. Students who violate WSU's Standards of Conduct for Students will receive an F as a final grade in this course, will not have the option to withdraw from the course and will be reported to the Office of the Dean of Students. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions: <http://www.conduct.wsu.edu/Content/Documents/conduct/09-10>

### Tentative Schedule:

Week 1:	<b>Basic Topology</b>
Weeks 2-4:	<b>Numerical Sequences and Series</b>
Weeks 4-6:	<b>Continuity</b>
Weeks 7-8:	<b>Differentiation</b>
Weeks 9-10:	<b>Riemann Integral</b>
Weeks 11-12:	<b>Functional Sequences and Series</b>
Weeks 13:	<b>Power Series and Fourier Series</b>
Week 14:	<b>Thanksgiving Break</b>
Weeks 15-16:	<b>Multi-variable Functions</b>