

**Math 3001 — Analysis I**  
SPRING 2015 SYLLABUS

**Class Location:** ECCR 150, MWF 9:00–9:50 AM

**Instructor:** T. Alden Gassert

**Office:** MATH 223

**Email:** [Thomas.Gassert@colorado.edu](mailto:Thomas.Gassert@colorado.edu)

**Office Hours:** M 3:00–4:00 PM, Tu 10:00–11:00 AM, Th 11:00–12:00 PM and by appointment.

**Text:** Stephen Abbott, *Understanding Analysis*, Springer, 2001. ISBN-13: 978-0387950600

**About the course:** This course is designed to provide a rigorous understanding of the basic concepts from calculus. These topics include the construction of real line, convergence of sequences and series, the Intermediate Value Theorem, the Mean Value Theorem, and the Fundamental Theorem of Calculus. A “rigorous understanding” means that, over the course of the semester, we will develop the tools in order to prove these important results.

**Course goals:** The primary goal of this course is not to confirm known results, but to develop and improve mathematical intuition, understanding, and literacy. By the end of this course, you should be able to write clear and precise proofs, as well as identify logic flaws in false arguments. In particular, you should keep the following in mind throughout the course:

- Your proofs should be understandable by your fellow classmates. They are your audience. They have access to the same definitions and theorems in the course, but not necessarily from beyond.
- Do not skip steps or draw upon assumptions in your proofs. This is fine when approaching a problem, but in a proof, each line should follow logically from the previous statement. Each line should be justified by simple arithmetic, a definition, or a theorem.
- A proof is composed of English sentences. The proofs in our text book, for example, are well thought out discussions on how one lays out an approach, then follows through.
- Do each problem twice. Work the problem out completely first, then put together a polished version to hand in.

**Grading:** Your final grade for the course will be computed as follows:

- 15% Class participation
- 15% Quizzes
- 20% Midterm 1 (Friday, February 13)
- 20% Midterm 2 (Friday, March 20)
- 30% Final Exam

**Class participation and homework:** Projects and problem will be assigned on a regular (weekly/biweekly) basis. You are not required to turn in every problem, however you are responsible for all understanding the material on the assignment.

Class participation grade will be determined by:

- Written work: either individually or as a group, you will be required to turn in a formal proof of one of the problems in each set.
- Group presentations: at various points during the semester, you will be asked, as groups, to present proofs to the class.
- Active participation in classroom discussions.

**Quizzes:** To ensure you are keeping up with the material, quizzes will be given on a regular (weekly/biweekly) basis. Quiz problems will generally (though not always) be taken from the homework.

**Special accommodations, religious observances, etc.:** If you qualify for special accommodations due to a disability, you will need to provide to me a letter from Disability Services. Please attend to this matter in a timely fashion.

Please inform me as soon as possible if you will miss an exam or a homework assignment due to religious observance so that we have time to arrange a reasonable accommodation.