

# Course Outline

## MATH 1171, Calculus I

**Instructor:** Maria Grazia Viola

**Office:** OA 3027

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**Office Hours:** Tuesday 2:00-3:30, Wednesday 3:00-4:00, Thursday 2:30-3:30, or by appointment.

**Lectures and Lab:** Lectures on Tuesday and Thursday 4:00-5:30 in OA 2006, Lab on Friday 8:30-9:30 in OA 2014

**Text:** Calculus, one and several variables, Tenth edition, by Salas, Hille, Etgen.

### Course Outline:

- **Functions (Chapter 1):** review of inequalities, domain, functions, operations with functions, inverse of a function, mathematical models.
- **Limits and Continuity(Chapter 2):** limits, indeterminant forms, one sided limits, continuity, the pinching theorem, the intermediate value theorem.
- **Derivatives (Chapter 3):** derivative as a limit, power rule, derivative of a sum and difference, product and quotient rules, chain rule, derivatives of trigonometric functions, implicit differentiation.
- **Applications of the first and second derivatives (Chapter 4):** Local extrema, increasing/decreasing functions, concavity of a function, max/min problems, absolute maxima and minima, vertical and horizontal asymptotes, graph sketching, related rates, differentials, Newton's approximation
- **Integration (Chapter 5):** definition of the definite integral of a continuous function, the fundamental theorem of calculus, indefinite integral, basic rules, integration by substitution, area and definite integrals, area between two curves, volumes of solids of revolutions.

**Grading System:** The final grade will be determined by a midterm, the homework and the final. The weight of each component is as it follows:

Homework Grade 20%

Midterm 30%

Final 50%

**Exam Schedule:** The midterm will be October 25.

**Homework:** I will give a list of homework problems to work as a practice. The homework will be collected on the due date. No late homework will be accepted except with a well documented valid university excuse. **IF YOU WORK ALL THE ASSIGNED HOMEWORK PROBLEMS, YOU SHOULD DO WELL IN THE COURSE.** I will drop your lowest homework grade when determining your homework grade for the semester.

**Calculator:** You will need a standard scientific calculator for the class. Calculators that can store formulas or any large amounts of data are not allowed on the test.

**Make-up policy:** A make-up midterm will be given only with well documented valid university excuses (sickness, etc).

**This is a general outline. Any communication or change regarding this outline, the time and location of exams as well as other matters concerning the course will be posted on the website and announced in the lecture.**