

## Mth 251, Section 002: Calculus I

**Instructor:** Dacian Daescu  
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**Office Hours:** 13:00-14:00 TR. Also by appointment.

**Class Time and Location:** TR 10:00-11:50AM      Neuberger Hall, Room 375

**Textbook:** *Calculus, 2nd Edition* by Jon Rogawski.

**Final Examination:** Wednesday, June 9, 10:15 - 12:05, in class.

**Course web site:** Syllabus, class assignments, and other information about the course will be available on the web site: <http://web.pdx.edu/~daescu/mth251.html>  
Students are responsible for checking this site on a regular basis.

**Course Description:** This course provides an introduction to the fundamental concepts of calculus and applications. Basic topics within calculus will be covered as follows:

### *Chapter 1: Precalculus Review*

1.1 Real numbers, functions, and graphs

### *Chapter 2: Limits*

- 2.1 Limits, Rate of change, tangent lines
- 2.2 Limits: Numerical and graphical approach
- 2.3 Basic limit laws
- 2.4 Limits and continuity
- 2.5 Evaluating limits algebraically
- 2.6 Trigonometric limits
- 2.7 Limits at infinity
- 2.8 Intermediate value theorem

### *Chapter 3: Differentiation*

- 3.1 Definition of the derivative
- 3.2 The derivative as a function
- 3.3 Product and quotient rules
- 3.4 Rates of change
- 3.5 Higher derivatives
- 3.6 Trigonometric functions
- 3.7 Chain rule
- 3.8 Derivatives and inverse functions
- 3.9 Derivatives of exponential and logarithmic functions
- 3.10 Implicit differentiation
- 3.11 Related rules (if time allows)

### *Chapter 4: Applications of the derivative*

- 4.1 Linear approximation and applications
- 4.2 Extreme values
- 4.3 The mean value theorem and monotonicity
- 4.4 The shape of a graph
- 4.5 L'Hopital's rule
- 4.6 Graph sketching and asymptotes
- 4.7 Applied optimization
- 4.8 Newton's method (optional)
- 4.9 Antiderivatives

This course plan may be modified during the semester. Such modifications will be announced in advance in class and on the course web page; the student is responsible for keeping abreast of such changes

**Prerequisites:** MTH 112 Minimum Grade of C- or ALEKS Calculus Test J

**Grading Policy:** The final grade will be based on tests and quizzes, as follows:

1. **Final exam:** Tuesday, June 9, 10:15 - 12:05, in class - comprehensive exam, **40%** of the course grade
2. **Midterm exam:** Tuesday, May 5, in class - **30%** of the course grade.
3. **Quizzes, 30% of the course grade:**
  - There will be 6 quizzes scheduled as follows: 04/09, 04/21, 04/28, 05/14, 05/21, 05/28, in class
  - The top 5 scores in your quizzes (all are equally weighted) will contribute as 30% of your course grade.

In assigning final course grades, plus/minus grading will be used.

*Homework will be assigned on a weekly basis.* Although homework will not be graded, it will provide the basis for the examinations. Questions related to homework problems will be addressed in class and students should actively participate in the discussion of the homework solutions.

Your work will be evaluated based on correctness, completeness, and *clarity* of the presentation.

*Makeup quizzes* will be accepted only if special permission of the instructor is obtained *in advance*. **Only under exceptional circumstances** will a student be permitted to shift the time of the **final examination**.

**Other special requests:** If you require special arrangements for seating, testing or other class requirements, please contact me after class or during my office hours.