

Instructor's Version

Syllabus for Mathematics 9A.

Text: 11th edition of Thomas' Calculus by Finney, Weir and Giordano

- Please see the Guidelines for Math 9ABC
- Please inform the department of your experience with the course, book and syllabus.

REQUIRED LECTURES

Limits and Derivatives [4 lectures]

- 2.1 Rates of Change and Limits
- 2.2 Calculating Limits Using the Limit Laws
- 2.3 Precise Definition of a Limit
- 2.4 One-sided Limits and Limits at Infinity
- 2.5 Infinite Limits and Vertical Asymptotes
- 2.6 Continuity
- 2.7 Tangents and Derivatives

Differentiation [9 lectures]

- 3.1 The Derivative of a Function
- 3.2 Differentiation Rules
- 3.3 The Derivative as a Rate of Change
- 3.4 Derivatives of Trigonometric Functions
- 3.5 The Chain Rule and Parametric Equations
- 3.6 Implicit Differentiation
- 3.7 Related Rates
- 3.8 Linearization and Differentials

Applications of Derivatives [12 lectures]

- 4.1 Extreme Values of Functions
- 4.2 The Mean Value Theorem and Differential Equations
- 4.3 Monotonic Functions and the First Derivative Test
- 4.4 Concavity and Curve Sketching
- 4.5 Applied Optimization Problems
- 4.6 Indeterminate Forms and L'Hopitals's Rule
- 4.8 Antiderivatives

Additional lectures

Guidelines for Mathematics 9ABC.

The current text: 10th edition of Thomas' Calculus by Finney, Weir and Giordano. We will phase in the 11th edition beginning with Math 9A Fall 2005.

1. The Department expects students to attend, and to participate in, all lectures and discussion sections of the Math 9ABC class in which they are enrolled. Instructors should inform students of this policy.
2. The Department encourages Instructors to develop mechanisms to achieve full student attendance and participation. Instructors might consider taking attendance or giving unannounced quizzes.
3. The Department expects students to develop some facility to solve word problems and to be able to apply the theory appropriately.
4. Instructors should
 - inform students of their grading schemes and policies and of any changes in these schemes and policies.
 - grant grades of C- or higher only to students who demonstrate adequate preparation for the next course in the sequence or program. For example, a student who is not competent to solve very elementary word problems does not meet this standard.
 - consider policies which would minimize or obviate the need for giving make-up examinations.
 - create all quizzes and tests.
5. The standard quiz/homework format for the discussion sections of Math 9ABC, as developed by the Teaching Assistants, calls for 15 to 20 minute quizzes to be given in roughly half of the discussion sections – these quizzes would be graded by the TAs - and roughly the same effort would be devoted to grading selected problems from the assigned homework for the other sessions. Instructors may give more or fewer quizzes, but the grading effort they should expect from the TAs is bounded by that of the standard format.
6. Since a purpose for giving a quiz is to encourage students to do the homework, some or all of the quiz problems might come directly from the homework assignments. On the other hand, while the homework should inform the tests, students should not be permitted to entertain the notion that most test questions should come without modification from the homework or any mock test.
7. The syllabi for these courses list sections of the textbook which the instructor is required to cover along with optional sections and topics. This latitude permits instructors to compensate for differences in student capabilities and it allows instructors to emphasize topics they think to be particularly important.
 - The syllabi are based upon three (50 minute) lectures per week for a ten week quarter.
 - Two lecture periods are allocated for testing.
 - One lecture is assumed to be lost due to a holiday.
 - About 24 lectures, the required lectures, are specified by sections in the textbook. Instructors must cover these sections.
 - Instructors in subsequent courses will assume that those required sections have been adequately covered.
 - Three or four lectures would be devoted to expanded coverage of scheduled topics, review and/or additional topics.
 - Instructors should not modify the first two weeks of the course in such a way as to prohibit students switching sections if that were necessary.

Please inform the department of your experience with the course, book and syllabus.