

Calculus I Sections 21 - 24 Fall 2010

Syllabus

Instructor:	Minoo Aminian
Office	Amos Eaton 330
Office Hours:	M : 11:00am – 12:00noon, F: 2:00 – 3:00pm or by appointment
E-mail:	aminim at cs dot rpi dot edu
URL:	http://www.cs.rpi.edu/~aminim/math1010/index.html
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Teaching Assistant:	Theodora Kampelou
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Office Hours:	F: 2:30 – 4:30pm

Course Objective

This is a course to study functions of a single variable with regard to limits, derivatives, applications of derivatives, definite integrals, indefinite integrals, the fundamental theorem of calculus, basic integration techniques and application of integrals such as computing area and volumes of revolution. Students can achieve mastery of basic symbol manipulation, ability in modeling problems, and understanding of basic calculus concepts.

Learning Outcomes:

Upon successfully completing the course, students should be able to demonstrate:

- Basic symbol manipulation skills
- The ability to convert between Calculus concepts and their graphical, numerical and symbolic representations.
- The ability to make Calculus models of applied problems described in words.
- The ability to solve basic Calculus problems that model real world situations and recover the solutions.
- The ability to apply Calculus to selected problems in science, engineering and mathematics.
- The ability to apply certain fundamental theorems and rules from Calculus to solve symbolic and graphical problems.
- The ability to state and explain basic Calculus definitions and theorems and their applications.
- The ability to use, derive and/or prove some of the basic Calculus concepts, definitions and theorems.

Textbook:

- **Required:** *Calculus, Early Transcendentals*, 6th edition by James Stewart
- **Recommended:** *Student Solution Manuals* to go with the Stewart text.

Course Schedule:

All sections 21 - 24 meet: MWR 2:00pm - 2:50pm in DARRIN 318

Recitation Sections Schedule:

Section	Time	Place
21	Tuesday 8:00am – 8:50am	LOW 4034
22	Friday 8:00am – 8:50am	LOW 4040
23	Tuesday 9:00 – 9:50am	LOW 4040
24	Friday 9:00 – 9:50am	LOW 4040

Homework:

Homework will be available on the course webpage. Homeworks are not graded, but I strongly advise you to do the homeworks on time and thoroughly since the homeworks are the basis for quizzes and exams. It is important to do these questions on a weekly bases as they are covered in class as there will likely be far too many questions to prepare for the exam if students wait.

Pre-Calculus Quiz:

There will be a quiz on Monday August 30th from the material that you are supposed to know **before** the calculus. This quiz will last 20 minutes and the problems are drawn from the book Ready Set Calculus. There will be no partial credits assigned for the problems in this quiz, and no calculators will be allowed. There will be no make-up for this quiz. This quiz will be worth extra credit.

Quizzes:

Quizzes will be given in your quiz block section, Math-1960, and worth 20% of the Calculus grade. **All students in Math-1010 must register for Math-1960.** There will be no calculators allowed on the quizzes. Quiz questions are drawn from the set of Calculus I skills problems at <http://calculus.math.rpi.edu>. The weekly schedule for when quizzes occur will be given out in each individual quiz block section. The quizzes are over material that students should remember throughout this course and beyond. The quizzes are graded on a no-partial-credit basis, but in grading each quiz the problem with the lowest grade will not be counted for the grade on that quiz.

In-class Exams:

There will be four in-class exams during the semester and like all exams and quizzes in Calculus, there will be no calculators allowed. You can find the material and dates of these exams in the tentative course schedule. The material include both no partial credit problems like quizzes and work out problems.

Final Exam:

Final exam will be comprehensive and includes all the course material, and like all exams and quizzes in Calculus, there will be no calculators allowed. The format will be the same as in-class exams.

Make up Exam Policy:

Exams are given during the class time, therefore there will be **no** makeup exam. Students who know they will miss an exam, must notify the instructor ahead of time. The only exception will be medical emergencies. All students must take the final exam as scheduled by the registrar.

Attendance:

You should attend all the lectures and recitations in order not to lose the opportunities to take the quizzes and discussion of all the material and concepts that will be in exams.

Grade Appeal:

You have one week from the time that you receive your grade to dispute your assigned grade. Grade appeals must be made in writing to me with your signature and include the original work in dispute.

Course Schedule:

This is a tentative schedule and there might be some changes in the topics and dates as we progress.

Class Dates	Topics	Course Material
Aug. 30, Monday	Introduction Pre-Calculus quiz	
Recitation, Tues.		
Sept. 1, Wed.	Inequalities, Absolute values, graphing	Appendix A, 1.1, 1.3
Sept. 2, Thursday	Trigonometry, Exponential Functions	Appendix D , 1.5
Recitation, Fri.		
Sept. 6, Monday	Laber Day. No Class	
Recitation, Tues.		

Class Dates	Topics	Course Material
Sept. 8, Wed.	Inverse Functions and Log Functions	1.6
Sept. 9, Thursday	Tangent and Velocity problems, Limits	2.1, 2.2, 2.3
Recitation, Fri.		
Sept. 13, Monday	Limits, Computing Limits using the Limit Law	2.2, 2.3
Recitation, Tues.		
Sept. 15, Wed.	Limits and Continuity	2.3, 2.5
Sept. 16, Thursday	Continuity, Limits at Infinity, Horizontal Asymptot	2.5, 2.6, 2.7
Recitation, Fri.		
Sept. 20, Monday	Derivative Definition, Derivative as a Function	2.8
Recitation, Tues.		
Sept. 22, Wed.	Review for Exam 1	
Sept. 23, Thursday	Exam 1 over Chapters 1-2 up to 2.7	Exam 1
Recitation, Fri.		
Sept. 27, Monday	Derivative of Polynomials & Exponentials	3.1
Recitation, Tues.		
Sept. 29, Wed.	Trig. Derivatives, Higher Derivatives	3.1, 3.3
Sept. 30, Thursday	Product and Quotient Rules	3.2
Recitation, Fri.		
Oct. 4, Monday	Chain Rule	3.4
Recitation, Tues.		
Oct. 6, Wed.	Implicit Differentiation	3.5
Oct. 7, Thursday	Derivative of Inverse Functions, Derivatives of Logarithms	3.4, 3.5, 3.6
Recitation, Fri.		
Oct. 11, Monday	No class, Columbus Day	
Oct. 12, Tues.	Log. Derivatives, Log Differentiation, Cosh, Sinh Basics	3.6, 3.11
Oct. 13, Wed.	Review for Exam 2	
Oct. 14, Thursday	Exam 2 over chapter 3 up to 3.7	

Class Dates	Topics	Course Material
Oct. 18, Monday	Related Rates	3.9
Recitation, Tues.		
Oct. 20, Wed.	Linear Approximations & Differentials	3.10
Oct. 21, Thursday	Maximum & Minimum Values	4.1
Recitation, Fri.		
Oct. 25, Monday	Absolute Extrema, Extreme value Theorem, Critical Numbers	4.2
Recitation, Tues.		
Oct. 27, Wed.	First Deriv. Test, Second Deriv. Test Inflection Points	4.3
Oct. 28, Thursday	L'Hopital rule	4.4
Recitation, Fri.		
Nov. 1, Monday	Optimization Problems	4.7
Recitation, Tues.	Review for Exam 3	
Nov. 3, Wed.		
Nov. 4, Thursday	Exam 3 over 3.9, 3.10 & Ch. 4 as covered	Exam 3
Recitation, Fri.		
Nov. 8, Monday	Antiderivatives	4.9
Recitation, Tues.		
Nov. 10, Wed.	Area Problem, Riemann Sums	5.1
Nov. 11, Thursday	Definite Integral, properties	5.1, 5.2
Recitation, Fri.		
Nov. 15, Monday	Antiderivatives, Initial Value Probs	5.2
Recitation, Tues.		
Nov. 17, Wed.	Fundamental Theorem of Calculus	5.3

Class Dates	Topics	Course Material
Nov. 18, Thursday	Indefinite Integrals & the Net Change Theorem	5.4
Recitation, Fri.		
Nov. 22, Monday	The Substitution Rule	5.5
Recitation, Tues.		
Nov. 24 - 26	Thanksgiving Holiday	
Nov. 29, Monday	Area between Curves	6.1
Recitation, Tues.		
Dec. 1, Wed.	Area between Curves, Volumes	6.1, 6.2
Dec. 2, Thursday	Solids of Revolution	6.2
Recitation, Fri.		
Dec. 6, Monday	Review for Exam 4	
Recitation, Tues.		
Dec. 8, Wed.	Exam 4 over 4.9, 5.1-5.5, Ch. 6 up to 6.3	
Dec. 9, Thursday	Work	6.4
Recitation, Fri.		
Dec. 13 - 14	No class, study for exam	
Dec. 15 - 21	Final Exam period	

Tentative Exam Dates:

Exam	Dates
1	Thursday, September 23 rd
2	Thursday, October 14 th
3	Thursday, November 4 th
4	Wednesday, December 8 th
Final Exam	TBA by the registrar

Grading

The final grade breakdown is as follows:

Pre-Calculus Quiz	2%
Quiz grade from the Quiz Block	20%
4 Exams	60%
Final	20%

The letter grade cutoffs will be:

- A ≥ 93
- A- ≥ 90
- B+ ≥ 87
- B ≥ 83
- B- ≥ 80
- C+ ≥ 77
- C ≥ 73
- C- ≥ 70
- D+ ≥ 65
- D ≥ 60
- F ≤ 59

Calculators and on-line communications are not permitted during the quizzes and exams. Exams may contain bonus points.

Academic Integrity

Academic dishonesty is considered a serious matter and the student may be subject to penalties as explained in the current Rensselaer Handbook of Student Rights and Responsibilities.

You may collaborate on homework assignments and in-class exercises. In fact this is encouraged, however each student must write his own solution.

Exams and quizzes are to be strictly independent work. Any collaboration or information sharing during these will be considered academic dishonesty. Note that graded material is scanned and recorded before it is returned.