

Department of Mathematical Sciences
WORCESTER POLYTECHNIC INSTITUTE
MA1023, Calculus 3, Term A00
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SYLLABUS

COURSE CONTENTS. The course consists of four main parts:

- **Indeterminate Forms and Improper Integrals.** Indeterminate forms, L'Hopital's rule, improper integrals.
Chapter 9.
- **Sequences and Series.** Sequences, series, absolute and conditional convergence, tests of convergence, power series and operations with them, Taylor and MacLaurin series.
Chapter 10.
- **Numerical Methods and Approximations.** Taylor polynomials, numerical integration, numerical solutions of equations.
Chapter 11.
- **Polar Coordinates, Curves and Vectors in 2D** Polar coordinates, calculus and graphing in polar coordinates, parametric curves, vectors in the plane – geometric and algebraic approach.
Sections 6 – 8 of Chapter 12, and Sections 1 – 3 of Chapter 13.

TEXT: Varberg, Purcell, Rigdon. *Calculus*, Eighth Edition, Prentice Hall.

LECTURES, CONFERENCES, LABS. You are supposed to spend 15 hours per week on this course. Of these, you will be spending 6 hours per week in class for: 4 hours of lectures, one conference session and one lab session. You are supposed to attend all lectures, conferences and labs (if you miss a class, it is your responsibility to make a copy of the classnotes from another student and make sure you learn what you have missed).

HOMEWORK and QUIZZES. Homework is assigned for each section of the book covered. Homework is a required component of the course. Working the exercises will help you learn, and give you some perspective on your progress. You are encouraged to discuss homework problems with each other.

Homework will never be collected or graded, but if you don't do it on time, you will not get enough practice, and this will ultimately hurt your grade. As an incentive to do your homework, every Friday there will be a short quiz made entirely from homework problems. There will be 7 quizzes altogether. The five best of them will count toward the final grade; the two lowest quiz grades will be dropped.

TESTS and FINAL EXAM. There will be three in-class tests and an in-class final exam. Each test will be 25 minutes long, and the final exam will be 50 minutes long. The final exam will be comprehensive and will cover all the studied material.

No make-up tests will be given. However, you will have a chance to re-take one test in the following two cases:

1. if you missed a test for a documented legitimate reason (illness, family emergency, etc.)
2. if you got 70% or more on at least two of the tests during the term (this means at least 70% on each of the two – not the average).

The test retake day is October 16, during class.

GRADES. You can always keep an eye on your grades by visiting <http://my.wpi.edu/> (be sure to have JavaScript turned on)

The final grade for the course will be calculated in the following way:

30% of the grade come from the final exam,

40% of the grade come from the three tests,

20% of the grade come from the Maple lab,

10% of the grade come from the 5 best quizzes.

These scores are combined to give a final number of points, between 0 and 100. Point ranges for the final grades are approximately given by:

A: 100-90

B: 89-80

C: 79-65

These cutoffs might go down a bit due to curving, but not by much. They will not go up. (In other words, 90 points guarantee you an A, etc).

Ancillary materials. On tests, you may bring a standard 8 1/2 by 11" sheet with *handwritten* notes on one side - no photographic copies of material are allowed. Calculators will be allowed on tests, but the problems will not assume you have one.

The following is a tentative schedule. Most of the time, we will be following it closely, but occasional deviations are to be expected.

MA1023, Advanced Placement, Term A of 2000

SCHEDULE

Day	Date	Topic	Section	Homework Problems
Th	08/31	Indeterminate forms of the type 0/0	9.1	1,3,7,9,18,23,30
Fr	09/01	Other indeterminate forms. QUIZ 1.	9.2	1,3,17,21,36,39
Mo	09/04	Labor Day (NO CLASSES)		
Tu	09/05	Improper Integrals	9.3	1,3,11,14
Th	09/07	More Improper Integrals	9.4	1,3,7,21,55
Fr	09/08	Sequences. QUIZ 2.	10.1	5,7,17
Mo	09/11	Series	10.2	1,3,5,7,15,20,21,23
Tu	09/12	Convergence Tests for Positive Series	10.3 10.4	1,5,12,13,15,16 1,3,5,9,15,19,35
Th	09/14	TEST 1 (9.1 to 9.4, 10.1)		
Fr	09/15	Absolute and Conditional Convergence. QUIZ 3.	10.5	1,5,15,17,23,25
Mo	09/18	Power Series	10.6	1,2,3,10
		Operations with Power Series	10.7	1,2,5,7,9,11
Tu	09/19	Operations with Power Series	10.7	13,15,25,29,31
Th	09/21	Taylor and Maclauren Series	10.8	1,3,5,7,21,27
Fr	09/22	Taylor Polynomials. QUIZ 4.	11.1	1,7
Mo	09/25	Taylor Polynomials	11.1	19,21
		Numerical Integration	11.2	21,22
Tu	09/26	Numerical Solution of equations	11.3 11.4	1,3,6,7,23,25 1,3,13,14
Th	09/28	TEST 2 (10.2 to 10.8)		
Fr	09/29	Polar Coordinates. QUIZ 5.	12.6	1,7,9,11,15,19,21
Mo	10/02	Graphing in Polar Coordinates	12.7	1,3,11,21,27,31,33,37
Tu	10/03	Calculus in Polar Coordinates	12.8	3,9,11,15,21,23,25
Th	10/05	Plane Curves	13.1	1,3,6,7,19,30,32
Fr	10/06	Vectors in 2D - Geometry. QUIZ 6.	13.2	14,15,17,18
Mo	10/09	Vectors in 2D - Algebra	13.3	1,3,6,7
Tu	10/10	Vectors in 2D - More Algebra	13.3	19,30,32
Th	10/12	TEST 3 (11.1, 12.6, 12.8, 13.1 to 13.3)		
Fr	10/13	Review. QUIZ 7.		
Mo	10/16	TEST Retake (for "chosen ones")		
Tu	10/17	FINAL EXAM		
Th	10/19	NO CLASS		