

Department of Mathematical Sciences
WORCESTER POLYTECHNIC INSTITUTE
MA 1022, Integral Calculus, Term A03, Section: A05
web page for the course: <http://www.wpi.edu/~bogdand/calc2/>

Integral Calculus SYLLABUS

Instructor: Bogdan Doytchinov, e-mail: bogdand@wpi.edu
Office: SH105D, Office hours: Tu 10:00am-12:00pm, Th 10:00am-12:00pm or by appointment.

Teaching Assistant:
Shawn Hallinan, e-mail: shawnhal@wpi.edu
Office: SH204, Office hours: We 3:00-4:00pm, Fr 2:00-3:00pm

Instructor's Associates:
Jane Bouchard, e-mail: bouchard@wpi.edu,
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Office: SH205, Office hours: TBA

Remark: The TA conduct your conference sessions, on Fridays, 10:00am. He also holds office hours when you can come and ask for help.

The IAs conduct the labs for the course. Their office hours are not restricted to lab questions - any calculus questions can be brought to them.

TEXT. D. Varberg, E. J. Purcell, S. E. Rigdon. *Calculus*, Eighth Edition, Prentice Hall.

COURSE CONTENTS. The course consists of four main parts:

- **The Integral.** Antiderivatives. Introduction to differential equations. Sums and sigma notations. The Definite Integral. The First and Second Fundamental Theorems of Calculus. The Mean Value Theorem for integrals.
Chapter 5.
- **Transcendental Functions.** The logarithm and the exponential function. Inverse functions and their derivatives. Inverse trigonometric functions and their derivatives.
Chapter 7.
- **Techniques of Integration.** Integration by substitution, trigonometric substitutions, integration by parts.
Chapter 8.
- **Applications of the Integral.** Volumes of solids (slabs, disks, washers). Volumes of solids of revolution (shells). Length of a plane curve. Work.
Chapter 6.

LECTURES and LABS. There are four lectures, one conference session, and one lab session per week. The lectures are conducted in SH308, on Mo,Tu,Th, and Fr, 1:00 - 1:50am. The conferences are conducted each Friday, 10:00-10:50pm in SH202.

The labs are conducted each Wednesday, 10:00-10:50pm in SH306. For a description and schedule, see

<http://www.wpi.edu/~bogdand/calc2/maple/index.html>

You are supposed to attend all lectures 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. Labs will be graded and they bring 10% of your final grade. You should turn in the lab assignments in teams of two. In exceptional cases, with special permission, you can work on the labs individually. Teams of three or more students are **not** allowed. A missed lab cannot be made up. No late work will be accepted.

HOMEWORK. 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, all test problems will be taken from the homework.

TESTS, EXAMS, GRADING POLICY.

You can always check your grades at myWPI.

There will be seven in-class tests (25 minutes each) and a two-hour Final exam on the evening Wednesday, October 15 (7:00-9:00pm). No books, notes, or calculators will be allowed on the tests and exams. The lowest of the seven test scores will be dropped.

No makeup tests will be given - it ever. If you miss a test, that will be the one dropped when computing the semester score.

The Final Exam will consist of two parts. The first part will be a Basic Skills component. You cannot pass the course if you do not pass the basic skills component. If you do pass the Basic Skills component, then your grade will be calculated in the following way:

60% of the grade come from the six best Tests,

30% of the grade come from the Final Exam,

10% of the grade come from the Maple Labs.

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 (if at all). They will not go up. (In other words, 90 points guarantee you an A, etc).

Anybody caught cheating on any of the tests or exams will be assigned a failing grade.

SCHEDULE. The following schedule is tentative. It is expected that we will follow it rather closely, but there will be some minor deviations from time to time.

MA 1022, Integral Calculus

SCHEDULE

Day	Date	Topic	Section	Homework
Th	8/28	Antiderivatives	5.1	23,24,32,33,47
Fr	8/29	Introduction to Differential Equations	5.2	3,4,5,12,15
Tu	9/02	Sums and Sigma Notations	5.3	10,12,16,19,21,25,26
Th	9/04	Test1		
Fr	9/05	The Definite Integral	5.5	11,17,20,23,24
Mo	9/08	First Fundamental Theorem of Calculus	5.6	16,17,18,23,39,44
Tu	9/09	Second Theorem of Calculus, MVT for Integrals	5.7	14,22,32,35,52,53
Th	9/11	Test 2		
Fr	9/12	Evaluating Definite Integrals	5.8	12,18,36,41,46,51,53,55,59,60
Mo	9/15	The Natural Logarithm Function	7.1	9,19,11,17,18,20,43,49,50
Th	9/18	Test 3		
Fr	9/19	Inverse Functions and Their Derivatives	7.2	15,17,25,26,43
Fr	9/19	The Natural Exponential Function	7.3	5,6,7,17,19,29,31,32,39
Mo	9/22	General Exponential and Logarithmic Functions	7.4	17,22,25,26,27,29,31
Th	9/25	Test 4		
Fr	9/26	The Inverse Trigonometric Functions	7.7	25,26,27,37,41,48,49,54
Fr	9/26	Integration by Substitution	8.1	4,6,9,12,32,45
Mo	9/29	Rationalizing Substitutions	8.3	5,7,9,10,16,18,20,22
Th	10/02	Test 5		
Fr	10/03	Integration by Parts	8.4	14,18,20,32,38,49
Fr	10/03	Volumes of Solids: Slabs, Disks, Washers	6.2	19,22,27,28,34
Mo	10/06	Volumes of Solids of Revolution: Shells	6.3	6,7,8,14,20
Th	10/09	Test 6		
Fr	10/10	Length of a Plane Curve	6.4	2,9,11,13,14,21
Fr	10/10	Work	6.5	3,18
Mo	10/13	Test 7		
Tu	10/14	Review		
We	10/15	Final Exam (in the evening)		