2014 – 2015 Spring Semester MATH 2301 Calculus I Sections 101 and 102 (Barsamian)

Description: First course in calculus and analytic geometry with applications in the sciences and engineering. Includes basic techniques of differentiation and integration with applications including rates of change, optimization problems, and curve sketching; includes exponential, logarithmic and trigonometric functions. No credit for both MATH 2301 and 1350.

Prerequisites: (A in 163A) or (B or better in MATH 1350) or (C or better in 1300 or 1322) or (Math placement level 3)

Retakes: May be retaken two times excluding withdrawals, but only last course taken counts.

Textbook: Essential Calculus: Early Transcendentals, 2nd Edition, with Enhanced Web Assign
Author: James Stewart, Publisher: Cengage. ISBN: 9781133540786

Calculators: Calculators will not be allowed on exams.

Web pages

- **for all sections of MATH 2301:** http://www.math.ohiou.edu/courses/calculus
- **for Sections 101 and 102:** http://www.ohio.edu/people/barsamia/2014-15.2.2301

Instructors:

- Mark Barsamian (Lecture), barsamia@ohio.edu, office: Morton Hall Room 538, phone: (740) 593-1273
- Chathuri Karunarathna (Recitation) ck472514@ohio.edu
- Zhijian Li (Recitation) zl542711@ohio.edu

Meeting Times and Locations:

Lecture Section 101 (Class Num. 6040) (Barsamian) meets 2:00pm – 2:55pm M,W,F in Morton 115

- Recitation Section 108 (Class Num. 6046) (Karunarathna) Thu 10:30am – 11:25am in Morton 215
- Recitation Section 109 (Class Num. 6047) (Li) Thu 9:00am – 9:55am in Morton 215

Lecture Section 102 (Class Num. 6041) (Barsamian) meets 12:55pm – 1:50pm M,W,F in Morton 115

- Recitation Section 110 (Class Num. 6048) (Karunarathna) Tue 10:30am – 11:25am in Morton 215
- Recitation Section 111 (Class Num. 6049) (Li) Tue 9:00am – 9:55am in Morton 215

Special Needs: If you have a physical, psychiatric, or learning disability that requires accommodation, please let me know as soon as possible so that your needs may be appropriately met.

Grading: During the semester, you will accumulate points by doing five different kinds of activities:

WebAssign:	50 points possible
Paper Homework:	50 points possible
Group Projects:	50 points possible
Exams (4 exams, 150 points each):	600 points possible
Final Exam:	250 points possible
Total:	1000 points possible

At the end of the semester, your Total will be converted to your Course Grade using this table:

Your Total	Your Percentage	Your Course Grade	Interpretation
900 - 1000	90% - 100%	A-, A	You mastered all concepts, with no significant gaps
800 - 899	80% - 89.9%	B-, B, B+	You mastered all essential concepts and many advanced concepts, but have some significant gaps.
700 - 799	70% - 79.9%	C-, C, C+	You mastered most essential concepts and some advanced concepts, but have many significant gaps.
600 - 699	60% - 69.9%	D-, D, D+	You mastered some essential concepts.
0 - 599	0% - 59.9%	F	You did not master essential concepts.

Attendance: Attendance is required for all lectures and recitations, and will be recorded by a sign-in system.

Missing Class: If you miss a class for any reason, it is your responsibility to copy someone's notes and study them. I will not use office hours to teach topics discussed in class to students who were absent.

Missing an Exam Because of Illness: If you are too sick to take an exam, then you must

(1) send me an e-mail before the exam, telling me that you are going to miss it because of illness,
(2) then go to the Hudson Student Health Center.
(3) Later, you will need to bring me documentation from Hudson showing that you were treated there.

Without those three things, you will not be given a make-up exam.

Missing Exams Because of a University Activity: If you have a University Activity that conflicts with one of our exams, you must contact me before the exam to discuss arrangements for a make-up. I will need to see documentation of your activity. If you miss an exam because of a University Activity without notifying me in advance, you will not be given a make-up exam.

Cheating on Exams: If cheat on an exam, you will receive a zero on that exam and I will submit a report to the Office of Community Standards and Student Responsibility (OCSSR). If you cheat on another exam, you will receive a grade of F in the course and I will again submit a report to the OCSSR.

Course Structure: One learns math primarily by trying to solve problems. This course is designed to provide structure for you as you learn to solve problems, and to test how well you have learned to solve them. This structure is provided in the following ways:

- **Suggested Exercises:** are listed in a table on on page four of this syllabus. **The goal of the course is for you to be able to solve all of the *Suggested Exercises*.** They are not to be turned in and are not graded, but you should do as many as possible and keep your solutions in a notebook.
- **Textbook Readings:** To learn how to do *exercises*, to succeed in the course, you must read the book.
- **WebAssign:** WebAssign is a computerized homework system, accessible through Blackboard. You will have frequent WebAssign assignments, of two types:
  - **Reading Quiz:** A college course is much more effective if you read each book section before coming to a lecture that covers that section. The Reading Quizzes will test whether you have read the book. They will consist of a small number of basic problems from a book section to be covered in the next lecture. The problems will be similar to book examples and similar to *Suggested Exercises*.
  - **WebAssign Homework:** These will consist of basic, intermediate and advanced problems from book sections that we have covered in class. Note that in class we will discuss general concepts and do only a few examples. The problems on the Skills Check will often be different from our class examples. Even so, they will always be similar to *Suggested Exercises*.
- **Paper Homework:** It is important to be able to write math in a way that other people can understand. Paper homework assignments will help you practice that skill. About once a week, you will be assigned a problem similar to a *Suggested Exercise* to solve and turn in on paper. These will be graded on accuracy and also on neatness and clarity of explanation. **You are encouraged to work together, but collaborating does not mean copying.** You may solve problems together, but the words you write and turn in should be your own. If students work together, the result should be a higher quality of work, with fewer errors. When I grade homework, if I find identical wording, identical math, and identical mistakes in different students' papers, I will deduct points. **Late homework papers will not be accepted.**
- **Group Projects:** In Recitation and sometimes in Lecture, you will be given Group Projects. Details about the groups, the projects, and the grading will be presented in the first week.
- **Lectures:** We have 41 lectures, totaling 2255 minutes. It is not possible to present the entire content of the course in 2255 minutes, and the lectures are not meant to do that. Lectures are meant to be a supplement to your reading the textbook and solving problems. In lecture, I will sometimes highlight book material that is particularly important, sometimes present material in a manner different from the presentation in the book, sometimes solve examples, and sometimes give you group work assignments.
- **Exams:** will be problems based on the list of *Suggested Exercises*.
- **Final Exam:** will cover the entire course and will be problems based on the list of *Suggested Exercises*.

Schedule for 2014 – 2015 Spring Semester MATH 3210/5210 (Barsamian)

Week	Class Date	Class topics	Recitation topic
1	Mon Jan 12	1.3 The Limit of a Function	
	Wed Jan 14	1.3 The Limit of a Function	
	Fri Jan 16	1.4 Calculating Limits	
2	Mon Jan 19	Martin Luther King Day	
	Wed Jan 21	1.5 Continuity	
	Fri Jan 23	1.6 Limits Involving Infinity	
3	Mon Jan 26	2.1 Derivatives and Rates of Change	Exam covering Chapter 1
	Wed Jan 28	2.2 The Derivative as a Function	
	Fri Jan 30	2.2 The Derivative as a Function	
4	Mon Feb 2	2.3 Basic Differentiation Formulas	
	Wed Feb 4	2.3 Basic Differentiation Formulas	
	Fri Feb 6	2.4 The Product and Quotient Rules	
5	Mon Feb 9	2.5 The Chain Rule	
	Wed Feb 11	2.6 Implicit Differentiation	
	Fri Feb 13	2.7 Related Rates	
6	Mon Feb 16	2.8 Linear Approx. & Differentials	Exam covering Chapter 2
	Wed Feb 18	3.2 Inverse Functions and Logarithms	
	Fri Feb 20	3.2 Inverse Functions and Logarithms	
7	Mon Feb 23	3.3 Derivatives of Log. & Exp. Funcs.	
	Wed Feb 25	3.5 Inverse Trigonometric Functions	
	Fri Feb 27	3.6 Hyperbolic Functions (skip inverses)	
8	Mon Mar 2	Spring Break	
	Wed Mar 4		
	Fri Mar 6		
9	Mon Mar 9	3.7 Indeter. Forms & L'Hopital's Rule	
	Wed Mar 11	3.7 Indeter. Forms & L'Hopital's Rule	
	Fri Mar 13	4.1 Maximum and Minimum Values	
10	Mon Mar 16	4.1 Maximum and Minimum Values	Exam covering Chapter 3
	Wed Mar 18	4.2 The Mean Value Theorem	
	Fri Mar 20	4.3 Derivatives and the Shape of a Graph	
11	Mon Mar 23	4.3 Derivatives and the Shape of a Graph	
	Wed Mar 25	4.4 Curve Sketching	
	Fri Mar 27	4.5 Optimization Problems	
12	Mon Mar 30	4.5 Optimization Problems	
	Wed Apr 1	4.6 Newton's Method	
	Fri Apr 3	4.7 Antiderivatives	
13	Mon Apr 6	4.7 Antiderivatives	Exam covering Chapter 4
	Wed Apr 8	5.1 Areas and Distances	
	Fri Apr 10	5.1 Areas and Distances	
14	Mon Apr 13	5.2 The Definite Integral	
	Wed Apr 15	5.2 The Definite Integral	
	Fri Apr 17	5.3 Evaluating Definite integrals	
15	Mon Apr 20	5.4 Fundamental Theorem of Calculus	
	Wed Apr 22	5.4 Fundamental Theorem of Calculus	
	Fri Apr 24	5.5 The Substitution Rule	
16	Thu Apr 30	Final Exam 2:30pm – 4:30 pm. Room will be announced later.	

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MATH 2301 Calculus I

Table of Suggested Exercises for 2014 – 2015 Spring Semester

(Text: Essential Calculus with Early Transcendentals, James Stewart, 2nd edition)

The goal of the course is for you to be able to solve the 461 exercises in this table.

1.3 The Limit of a Function	2, 3, 5, 8, 12, 21
1.4 Calculating Limits	2, 3, 10, 12, 15, 17, 18, 19, 20, 21, 22, 23, 28, 29, 30, 31, 32, 33, 35, 42, 43, 45, 47
1.5 Continuity	3, 4, 6, 13, 14, 15, 16, 29, 30, 32, 37, 39, 41, 45
1.6 Limits Involving Infinity	1, 2, 3, 4, 5, 6, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 41, 42;
2.1 Derivatives and Rates of Change	1, 4, 5, 7, 9, 11, 15, 16, 17, 18, 23, 25, 27, 43
2.2 The Derivative as a Function	1, 3, 5, 7, 9, 11, 13, 17, 18, 19, 20, 12, 22, 35, 36
2.3 Basic Differentiation Formulas	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 43, 45, 47, 49, 51
2.4 The Product and Quotient Rules	3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 51, 55
2.5 The Chain Rule	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 39, 47, 51, 53, 57, 62;
2.6 Implicit Differentiation	1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 25, 32
2.7 Related Rates	1, 2, 3, 5, 7, 9, 11, 13, 15, 17, 25, 29
2.8 Linear Approx. & Differentials	1, 5, 11, 12, 15, 17, 19, 20, 21, 23, 24
3.2 Inverse Functions and Logarithms	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 18, 29, 31, 33, 35, 37, 39, 44, 46, 48, 63
3.3 Derivatives of Log. & Exp. Funcs.	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 65
3.5 Inverse Trigonometric Functions	1, 3, 5, 7, 9, 13, 17, 19, 21, 23, 25, 34, 35, 37, 39
3.6 Hyperbolic Functions (skip inverses)	1, 2, 3, 4, 5, 6, 19, 27, 28, 29, 30, 31, 32, 33, 34, 35, 43, 44, 45, 46
3.7 Indeter. Forms & L'Hopital's Rule	1, 5, 9, 13, 17, 21, 25, 29, 33, 41, 43, 47
4.1 Maximum and Minimum Values	1, 3, 5, 7, 9, 11, 13, 15, 17, 21, 22, 23, 24, 25, 26, 27, 28, 29, 36, 37, 39, 41, 43, 45
4.2 The Mean Value Theorem	1, 3, 5, 7, 9, 11, 13, 15, 17, 23, 26, 27
4.3 Derivatives and the Shape of a Graph	1, 3, 5, 7, 9, 11, 15, 19, 21, 23, 25, 27, 29, 33, 35, 40, 41
4.4 Curve Sketching	5, 7, 9, 11, 13, 15, 17, 21, 27, 31, 33, 37, 39, 41, 43
4.5 Optimization Problems	3, 5, 7, 9, 13, 15, 16, 17, 21, 22, 25, 26, 40
4.6 Newton's Method	1, 3, 5, 6, 9, 21, 22
4.7 Antiderivatives	1, 5, 9, 13, 17, 21, 25, 29, 31, 33, 35, 37, 41, 44
5.1 Areas and Distances	1, 3, 5, 7, 9, 11, 13, 14
5.2 The Definite Integral	1, 3, 5, 7, 9, 11, 19-21, 23, 29, 30, 31, 33, 35, 38, 39, 40
5.3 Evaluating Definite integrals	1, 3, 5, 7, 9, 11, 13 ,15 ,17, 19, 21, 23, 25, 27, 29, 37, 41, 42, 47, 49, 52
5.4 Fundamental Theorem of Calculus	1, 3, 5, 7, 9, 11, 15, 17, 19
5.5 The Substitution Rule	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 22, 23, 27, 29, 30, 34, 37, 41, 43, 49, 50

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