



**College of Natural & Mathematical Sciences**  
**MATH 151 Calculus I (4,0)**

**Spring 2015**  
**4 Credits**

**Prerequisites:** High school mathematics that includes two years of algebra, one year of plane geometry and one-half year of trigonometry and equivalent/satisfactory score on ACT or Placement Exam, or MATH 111 and MATH 131 with grades of C or better.

**Instructor(s):** George Voutsadakis

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906-635-2667  
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**Office Hours:**

Monday	Tuesday	Wednesday	Thursday	Friday
9:00-9:50	9:00-9:50	9:00-9:50	9:00-9:50	9:00-9:50

**Required Texts:** Brief Calculus: Early Transcendentals, by Jon Rogawski, Freeman, 2<sup>nd</sup> Edition

**Calculator:** The TI-83 Plus/ TI 84 is the recommended calculator for this course. On some of the exams and quizzes, the instructor may ask you to solve problems without using a calculator.

**Course Description:** Limits, continuity and inverse functions. Logarithmic and exponential functions. Differentiation and applications of the derivative. L'Hopital's rule. Inverse trigonometric functions. Integration and the definite integral.

**Course Goals:** Provide students with an introduction to differential and integral calculus and prepare students to go on to Calculus II.

**Course Objectives:** At the end of this course, you should be able to:

1. Describe the concept of limit intuitively; find **limits** graphically, algebraically, analytically, and using L'Hôpital's rule; apply limits to the concepts of continuity, derivative, and definite integrals and then interpret the results.
2. Describe intuitively the concept of **continuity** and state rigorously the definition using limits; identify intervals of continuity and points of discontinuity in particular functions; and state, interpret, and apply the Intermediate Value Theorem.
3. Describe intuitively the concept of **derivative** and state rigorously the definition using limits; find and interpret derivatives using the definition, the various rules available, implicit differentiation and related rates; apply to the analysis of functions (increasing, decreasing, optima); and state, interpret, and apply the Mean Value Theorem.
4. Use area and average value to describe intuitively the concept of **integration**; define integration rigorously using limits; find anti-derivatives using integration rules and substitution; state and interpret the Fundamental Theorem of Calculus and use this theorem to evaluate definite integrals; and apply integration techniques to problems involving rates.
5. Solve **application** problems by drawing sketches, where applicable, and using English statements to name variables, find equations, define parameters, and create models; then apply algebra, trigonometry, and calculus methods to solve for the unknown values, and report the solution.

College of Natural &amp; Mathematical Sciences

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This course is designed to meet the Mathematics General Education Outcome. Students will be able to analyze situations symbolically and quantitatively in order to make decisions and solve problems. All of the above *Course Objectives* will be used to satisfy the Mathematics General Education Outcome.

**Grading Scale and Policies:****Point Values:**

Exams	200 points
Final exam	100 points
Quizzes	100 points
<u>Total 400 point</u>	

**Grading Scale%:**

94-100	A	70-74	C
90-93	A-	65-69	C-
87-89	B+	60-64	D+
84-86	B	55-59	D
80-83	B-	50-54	D-
75-79	C+	0-49	F

**Grading Policies:** You will be graded on correct methodology, i.e., if you provide an answer but show no work or your work is incorrect, you will receive no credit. Your solutions must be written in a connected, step-by-step logical fashion and all variables should be clearly defined. If your solution is not written clearly, you will not receive full credit. In many cases, setting up the correct mathematical model and using this model to solve a problem will be just as important as computing a numerical answer.

The homework exercises for each section covered are on the last page of this handout. You should spend a lot of your math study time doing homework. If you are struggling with your homework seek help from your instructor or the tutors in the Learning Center.

The course outline on the next-to-last page is a projection of the general structure and content of the course. It is tentative and subject to change without prior notice.

**Ground Rules:**

**1. Calculator:** The TI-83/84 Plus is the recommended calculator for this course. Your instructor reserves the right to ask you to solve problems in class, during quizzes and during exams without the use of a calculator. All other electronic devices, including computers, PDAs and cell phones, must be turned off for all class lecture sessions.

**2. Purpose of Lecture:** Lectures are an opportunity for students to ask questions and seek clarification on material. This implies student preparation has been accomplished prior to class. Lecture is also the opportunity for the instructor to coordinate coverage of the material and present material that is historically or potentially difficult. It does not negate student preparation or study.

**3. Attendance Policy:** Attendance is strongly encouraged. If you miss a class, or are late, you are still responsible for class notes and assignments. Moreover, you will be assigned a 0 score should a quiz take place during that missed lecture.

**4. Make-up Policy:** Each exam should be taken at the designated time. An exam may be taken prior to or after the scheduled date, by agreement with the instructor, provided that the student provides a request with a

College of Natural & Mathematical Sciences

Spring 2015

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**documented valid excuse well in advance of the scheduled date. If an absence is unexcused, no make-up will be provided, either for exams or for quizzes.**

**5. Academic Integrity:** Students are expected to perform all assigned work themselves. Any form of cheating or plagiarism will be handled in accordance with the Academic Integrity Procedures. Violations of the University Academic Integrity Policy may result in an F course grade.

**6. Testing:** Use of head phones, cell phones and hats during exams is prohibited.

**University Policies and Statements:**

**The Americans with Disabilities Act & Accommodations**

In compliance with Lake Superior State University policies and equal access laws, disability-related accommodations or services are available to students with documented disabilities.

If you are a student with a disability and you think you may require accommodations you must register with Disability Services (DS), which is located in the KJS Library, Room 130, (906) 635-2355 or x2355 on campus. DS will provide you with a letter of confirmation of your verified disability and authorize recommended accommodations. This authorization must be presented to your instructor before any accommodations can be made.

Students who desire such services should meet with instructors in a timely manner, preferably during the first week of class, to discuss individual disability related needs. Any student who feels that an accommodation is needed – based on the impact of a disability – should meet with instructors privately to discuss specific needs.

**IPASS (Individual Plan for Academic Student Success)**

If at mid-term your grades reflect that you are at risk for failing some or all of your classes, you will be contacted by a representative of IPASS. The IPASS program is designed to help you gain control over your learning through pro-active communication and goal-setting, the development of intentional learning skills and study habits, and personal accountability. You may contact 635-2887 or email [ipass@lssu.edu](mailto:ipass@lssu.edu) if you would like to sign up early in the semester or if you have any questions or concerns.

Tentative course outline

Week	Dates	Monday	Tuesday	Thursday	Friday
1	01/12	1.1,1.2	1.3	1.4	1.5
2	01/19	1.6	1.7	2.1	2.1
3	01/26	2.2	2.2	2.3	2.4
4	02/02	2.5	2.6	Review	Exam 1
5	02/09	2.7	2.8	3.1	3.2
6	02/16	3.3	3.4	3.5	3.6
7	02/23	3.7	3.8	Review	Exam 2
8	03/02	BREAK	BREAK	BREAK	BREAK
9	03/09	3.9	3.10	3.11	3.11
10	03/16	4.1	4.2	4.3	4.4
11	03/23	4.5	4.6	Review	Exam 3
12	03/30	4.7	4.8	4.9	4.9
13	04/06	5.1	5.2	5.3	5.4
14	04/13	5.5	5.6	Review	Exam 4
15	04/20	5.7	5.8	5.8	Review

Assignments

Section	Exercises
2.1	1, 5, 6, 7, 11, 17, 19, 21, 25
2.2	1, 3, 6, 7, 17, 25, 27, 35, 39, 47, 53
2.3	1, 2, 5, 7, 9, 13, 17, 21, 24, 27, 30, 31
2.4	2,3,4,5, 9, 13, 17, 23 29, 37, 47, 51, 57, 65, 67, 69, 73, 75, 77, 79
2.5	1, 7, 9, 11, 17, 21, 23, 27, 31, 47, 49, 51
2.6	1, 2, 7, 17, 33
2.7	1, 2, 3, 4, 7, 9, 11, 13, 19, 25
2.8	1, 3, 6, 17
3.1	3, 7, 11, 12, 13, 19, 27, 33, 39, 51, 55
3.2	3, 9, 13, 15, 21, 25, 27, 33, 37, 41, 43, 46
3.3	1, 5, 7, 9, 11, 15, 19, 21, 27, 37, 39, 51
3.4	1, 9, 11, 15, 17, 23, 25, 27, 31, 35, 41, 43
3.5	3, 7, 9, 13, 21, 25, 39, 41
3.6	1, 3, 5, 7, 9, 11, 13, 15, 19, 23, 25, 29, 51
3.7	1, 5, 9, 11, 17, 23, 19, 33, 35, 39, 43, 49, 55, 61, 93
3.8	3, 5, 8, 11, 13, 15, 19, 21, 23, 25, 27, 29, 31, 33, 35
3.9	1, 3, 5, 9, 11, 17, 23, 27, 31, 37, 41, 45, 49, 53, 59, 65, 73, 75
3.10	3, 5, 7, 9, 11, 15, 19, 23, 31, 44, 48
3.11	1, 5, 7, 9, 15, 17, 19, 23, 37
4.1	1, 5, 9, 13, 17, 23, 31, 35, 39, 45, 59
4.2	1, 3, 11, 17, 29, 35, 39, 47, 55, 65, 75, 77, 79
4.3	1, 3, 5, 9, 15, 19, 21, 25, 31
4.4	1, 5, 9, 15, 23, 27, 35, 42
4.5	3, 5, 9, 11, 13, 17, 21, 25, 27, 35, 49
4.6	55, 57
4.7	1, 5, 9, 13, 17, 21, 25, 29, 35, 43, 57
4.8	1, 3, 7, 11, 13, 14, 21
4.9	1, 3, 5, 7, 15, 17, 21, 23, 29, 33, 37, 41, 45, 49, 51
5.1	13, 15, 17
5.2	1, 3, 5, 7, 9, 13, 15, 23, 25, 27
5.3	1, 3, 5, 7, 11, 17, 23, 25, 27, 29, 33, 35, 37
5.4	1, 3, 7, 9, 11, 13, 17, 21, 23, 25, 29
5.5	1, 3, 5, 7, 9, 17, 21
5.6	1-71 (every other odd), 79, 83, 87, 89
5.7	1-69 (every other odd)
5.8	1, 3, 7, 13, 17, 35