

OAKLAND UNIVERSITY  
COURSE: MTH 1554, Calculus I, 4 Credits  
COLLEGE OF ARTS AND SCIENCES  
DEPARTMENT OF MATHEMATICS AND STATISTICS  
STUDENT INFORMATION SHEET (SYLLABUS)

**SEMESTER:** Winter 2018

<u>Faculty</u>	<u>Office</u>	<u>Section</u>	<u>Class Time</u>	<u>Room</u>	<u>Phone</u>	<u>Email</u>
S. Saleem	393 MSC	10166	10:40-11:47 am	MWF 203 DH	4031	<a href="mailto:sdsaleem@oakland.edu">sdsaleem@oakland.edu</a>

Attendance at every class is expected!!!

**OFFICE HOURS:** MW: 12:00 – 1:00 PM, TR : 10:00 – 11:00 AM

**ADDITIONAL SUPPORT:** You are encouraged to make use of supplemental instruction (SI); location and meeting times are given above. SI involves group activity designed to support the material and problem solving. Students of any section are encouraged to go to the SI. You are also encouraged to use the Tutoring Center (103 NFH) for peer tutoring, study skills seminars, videotapes on mathematical topics, and more.

**PREREQUISITES:** A 2.0 or better in MTH 1441 (formerly 141) or an equivalent course at another school, or placement "C." Your instructor may give you a pretest on the prerequisite material during the second class and it will be counted as a quiz. You will be given a review sheet containing all the topics on the first day.

**COURSE OBJECTIVES:** The concept of a real-valued or a vector-valued function of real variables is one of the most important mathematical tools used to describe, evaluate, and predict real world phenomena. MTH 1554 is the first course in a sequence of courses designed to expand the student's understanding of the relationship between real world phenomena and function descriptions of the phenomena. Building on the student's pre-calculus knowledge, this course introduces the limit concept and several of its major theoretical applications; continuity, the derivative, and the integral. The successful student will develop an intuitive understanding of the derivative as the slope of the tangent line of a function and as the instantaneous rate of change of a function; the ability to apply the dual interpretations of the derivative to describe functional behavior and to solve optimization problems; an intuitive understanding of the integral as the proper generalization of the rate times time formula of high school science, as an area under a curve, and as an antiderivative; the ability to perform elementary applications involving the dual nature of the integral; a beginning understanding of the relationship between the derivatives and the integral (the Fundamental Theorem of the Calculus); and computational facility with some elementary limit computations, computation of derivatives of elementary functions and functions composed of elementary functions, and some elementary computational facility with integrals.

**TEXT:** *Calculus, Single Variable, Early Transcendentals, 8th Ed.* (or *Calculus, Early Transcendentals, 8th Ed.* for students who are planning to take MTH 2554) by Stewart, published by Brooks/Cole. The material to be covered is contained in chapters 2-5. (See the detailed Tentative Schedule below for MWF classes; the MW classes can be adjusted

accordingly). You are expected to purchase a copy of this textbook. A student solutions manual, containing worked-out solutions to many of the exercises, is available at the book center, but its purchase is totally optional (homework will be assigned from both those exercises that have answers in the back of the text and/or solutions in the manual and those that do not). In addition, a copy of the textbook, student solutions manual, alternative textbooks, and other material will be on 2-hour reserve at Kresge Library.

**CALCULATOR POLICY:** For this course, a graphing calculator is strongly recommended. There may be some restriction on calculator usage on the exams. These will be announced in class. To receive full credit on tests, be sure to show all the mathematical work necessary for setting up a calculation before using the calculator. Using a calculator to store formulas you need for a test is not permitted.

**TESTS:** In the sections with MWF schedule, there will be three hourly exams (worth 100 points each) on **February 2, March 5** and **April 2**.

**QUIZZES :** There will be Five Quizzes in the semester. All Quizzes will be taken on Friday. The date & materials for each quiz will be announced in class on Wednesday. The Quizzes worth 100 points.

**FINAL EXAM:** The final exam is comprehensive. For the day-time sections, it will be given on Friday, April 20, at 8:00 - 10:45 am, in a room to be announced. The time for the evening section will be announced in class. The final exam will be worth 200 points.

**EMERGENCY CLOSING:** If the University is closed at the time of an hourly exam, it will be given during the next class period when the University reopens. The Oakland University emergency closing number is 370-2000.

**GRADING POLICY:** Your course grade will be based upon the weighted percentage taken from your quizzes, hourly exams, and final exam. There is no fixed grading scale for this course; a conversion formula from your percentage score to Oakland University grades will be determined with each exam and announced upon return of the exam. An indication of the class performance on that exam will also be announced.

<u>Grading Criteria</u>	<u>Scale</u>
Test 1: 100 pt	95% – 100%: 4.0
Test 2: 100 pt	80% – 94.9%: 3.0 – 3.9
Test 3: 100 pt	65% – 79.9%: 2.0 – 2.9
Quizzes: 100 pt	50% – 64.9%: 1.0 – 1.9
Final Exam: 200 pt	Less than 50%: 0.0

**MAKE-UP POLICY:** No make-up exams will be given. If you miss an hourly exam and have a valid excuse, your grade for the missed exam will be determined from the portion of the final exam corresponding to the missed material; otherwise, the missed exam will count as a 0.

**ACADEMIC HONESTY:** Cheating is a serious academic offense. Oakland University policy requires that all suspected instances of cheating be reported to the Academic Conduct committee for adjudication. Anyone found guilty of cheating in this course will receive a course grade of 0.0, in addition to any penalty assigned by the Academic Conduct Committee. Working with

others on homework does not constitute cheating; handing in an assignment that has essentially been copied from someone else does. Receiving help from someone else or from unauthorized written material during a test or final exam is cheating, as is using a calculator as an electronic "crib sheet." Providing such assistance for someone else also constitutes cheating.

**GENERAL EDUCATION LEARNING OUTCOMES:** For the General Education Foundations Knowledge area of Formal Reasoning, the student will demonstrate knowledge of one or more formal reasoning systems such as computer programming, mathematics, statistics, linguistics, or logic, and application of formal reasoning to read, understand, model, and solve problems across a variety of applications.

The primary constructs of this course (the derivative and the integral) are motivated by interpretation and application to other disciplines, and certain topics in the course address these applications.

In addition, this course addresses the cross-cutting capacity of critical thinking. Critical thinking includes the ability to raise vital questions and problems formulating them clearly, the ability to gather and assess relevant information using abstractions to interpret it effectively the ability to come to well-reasoned conclusions and solutions and test them against relevant criteria, the ability to recognize and assess the assumptions, implications, and consequences of alternative systems of thought, and the ability to work with others to figure out solutions to complex problems. Aspects of this will be addressed in virtually all sections and daily homework includes applied models based upon new situations, requiring careful reading and selection of a relevant mathematical context and technique. Some sections of this course may include more complex applied problems. See your instructor's sheet on daily homework for details.

**STUDY HABITS:** Cultivating good work and study habits is necessary for doing well in mathematical sciences courses. You should keep on top of the subject by doing large amounts of homework (frequently working on problems not assigned), regularly reviewing earlier material, asking questions in class, and making good use of your instructor's office hours and the Academic Skills Center. If you are having difficulty with some concept or mathematical procedure, you should get it clarified as soon as possible. If you make mistakes on tests or quizzes, rework these problems with the idea that you will not make similar mistakes later. You should expect that doing all of these things will take at least two hours outside of class for each hour in class. Many students find it helpful to spend some of this time working with others, in study groups.

**DROPPING THE COURSE:** The Department of Mathematics and Statistics is committed to achieving the goal of an academically sound freshman and sophomore mathematical sciences curriculum in which most conscientious Oakland University students can expect to be successful. If you are considering dropping the course and wish to discuss the matter further, you are encouraged to contact your instructor.

### **Important Dates**

January 17: Last day for 100% tuition refund and "no record" drop

February 17: Midterm evaluation deadline

February 17-25 : Winter Recess (no classes)

March 14: Last day of official withdraw (W grade)

April 17: Last day of classes

April 20: Final Exam, 8:00 - 10:45 AM

## TENTATIVE SCHEDULE

	Monday	Tuesday	Wednesday	Thursday	Friday
1	Jan 1		<i>Introduction, 2.1 Slope &amp; Rate</i>		<b>Pretest</b>
2	Jan 8 2.2 Intuitive Limits		2.3 Limit Thms.		2.3 Limit Thms.
3	Jan 15 <b>King's Day</b>		2.4 Definition of a Limit.		2.5 Continuity, Intermediate Value Thm.
4	Jan 22 2.5 Continuity, Intermediate Value Thm		2.6 Limits at Infinity		2.7 Derivatives & Rate of change
5	Jan 29 2.8 Derivative as a function		<b>Review</b>		<b>Exam 1</b>
6	Feb 5 3.1 Derivative formulas		3.2 Prod. & Quot. Rules		3.3 Trig. fns.
7	Feb 12 3.4 Chain Rule		3.5 Implicit diff., Inv. trig. fns.		3.6 Log. fns. & log. diff.
8	Feb 17		<b>Winter Recess</b>		
9	Feb 26 3.9 Related Rates		3.9 Related Rates		3.10 Lin. Approx. & Differentials
10	Mar 5 <b>Review</b>		<b>Exam 2</b>		4.1 Max. & Min.
11	Mar 12 4.1 Max. & Min.		4.2 Mean Value Thm.		4.3 1st Der. Test
12	Mar 19 4.13 2 <sup>nd</sup> Der. Test		4.4 Indet. Forms		4.7 Applied Optimization
13	Mar 26 4.7 More Applied Opt.		4.9 Antiderivatives		<b>Review</b>
14	Apr 2 <b>Exam 3</b>		5.1 Area & Dist.		5.2 Defn. of the Integral
15	Apr 9 5.3 Fund. Thm. of the Calc.		5.4 Indef. Integrals		5.5 Substitution
16	Apr 16 <b>Review</b>				<b>Final Exam (8:00-10:45AM)</b>