

**MA 111E: Fall 2022 Calculus I**

Mathematics

Albert Nerken School of Engineering at The Cooper Union

Course Description: Functions; limit of functions, continuity. The derivative and its applications: curve sketching, maxima and minima, related rates, velocity and acceleration in one dimension; trigonometric, exponential, logarithmic and hyperbolic functions. Definite and indefinite integrals; area, the fundamental theorem, techniques of integration.

4 credits; 5 contact hours. Prerequisite: none.

Instructor: Mili Shah (mili.shah@cooper.edu)  
41 Cooper Square, Room 311

Lecture: Monday 2:00PM - 3:50PM, Room 104  
Wednesday 10:00AM - 11:50AM, Room 104

Recitation: Tuesday 2:00PM - 2:50PM, Room 104

Office Hour: Tuesday 10:30AM-12:01PM or by appointment

Participation: Please contribute to the classroom environment by asking questions and participating in discussions. Your interaction will be considered when assigning borderline grades, as will improving performance throughout the course of the semester.

Exams: Three exams (20% each) and one final (30%) will be given during the semester. Each exam will be one hour and the final will be two hours. You may not use outside resources: calculators, other students, other books, etc.

Homework: Suggested homework problems are posted on the following page. These homework problems will not be graded but are representative of information that is required. Similar homework will be presented on quizzes, exams, and finals.

Quizzes: There will be quizzes given throughout the semester due Tuesdays at 11:59pm. These will be based on problems from the previous week. Collectively, these quizzes will constitute 10% of the final grade. The lowest quiz grade will be dropped.

Grading: Quizzes: Due Tuesdays at 11:59pm (10% of final grade)  
Exam 1: Wednesday, September 28 (20% of final grade)  
Exam 2: Wednesday, October 26 (20% of final grade)  
Exam 3: Wednesday, November 23 (20% of final grade)  
Final Exam: Wednesday, December 14 (30% of final grade)  
*Note: I reserve the right to adapt quiz and exam dates.*

Assessment: Quizzes will be posted on the website  
<https://webwork.runestone.academy/webwork2/cooper-shah-ma-111-fall-2022/>  
Your initial login is your Cooper username and your password is your Cooper ID number.

Late policy: No quiz, exam, or final may be made up without prior arrangement or a written excuse.

Text: Thomas, Weir, and Hass, *Thomas' Calculus*, 12th edition, Pearson (2009)  
ISBN-13: 978-0321587992

Disabilities: If you believe you are entitled to an accommodation on assessments through the Americans with Disabilities Act, you must self-identify to the Office of the Dean of Students and meet with me during the first week of the term to discuss arrangements for meeting your accommodation.

<b>Date</b>	<b>Homework</b>
8/29/2022	A.1: 1-4, 6-8, 11, 13-16, 19-22, 27 1.1: 1-12, 14, 15, 17, 20, 22, 25, 29, 35, 37-39, 47, 48, 50-55, 72 1.2: 1-5, 9, 17, 23, 25, 41, 51, 63, 67, 77, 85 1.3: 4, 8, 13, 14, 18, 21, 29, 30, 32, 39, 41, 54
8/31/2022	2.1: none 2.2: 2, 13, 15, 17, 19, 21, 33, 35, 37, 38, 40, 52, 60, 75
9/5/2022	<b>Labor Day</b>
9/7/2022	2.3: 26, 36, 37, 39, 44, 49, 54, 56 2.4: 1, 5, 7, 11, 18-21, 25, 30, 31, 42, 46
9/12/2022	2.5: 1-9, 13, 16-21, 29, 37, 41, 52, 59, 62, 65 2.6: 1, 3, 5, 7, 10-11, 13,15, 18-19, 21, 31, 35-47(odd), 55, 67, 72, 77, 81, 83, 92, 101
9/14/2022	3.1: 7, 13, 23, 27, 33, 34, 36 3.2: 3, 9, 15, 21, 25, 27-30, 32, 37, 41, 42, 45, 47, 54, 58
9/19/2022	3.3: 1,3, 8, 11, 17, 19, 21, 23, 29, 33, 43, 47, 56, 65 3.4: 1, 5, 7, 15, 22, 23
9/21/2022	3.5: 2, 3, 5, 15, 19, 33b, 35, 47, 49, 59, 65, 66 3.6: 3, 5, 8, 11-23(odd), 26, 29, 31, 34, 36, 37, 61, 66, 71, 83, 88, 89,94
9/26/2022	3.7: 3, 7, 21, 23, 35, 44, 47 3.8: 1, 7, 11, 13, 23, 32, 34, 42
9/28/2022	<b>Exam 1</b>
10/3/2022	3.9: 3, 8, 17, 19, 21, 25, 26, 29, 33, 35, 37, 44, 48, 54ab, 55 4.1: 1, 4, 5, 7, 9-14, 20, 23, 35, 51, 61, 63, 71, 76, 84
10/5/2022	4.2: 5, 7-12, 17, 26, 28, 47, 64, 67 4.3: 3, 17, 23, 26, 29, 31, 63ac, 70
10/10/2022	7.1: 1, 3, 5, 12, 14, 15, 22, 31, 38, 53, 57, 58, 63 7.6: 1ab, 3ab, 11, 13, 15, 23, 100, 107, 116
10/12/2022	7.5a: 4, 9, 11, 13-15, 17, 23, 25, 35, 47, 68, 75 4.4: 1-3, 5, 7, 11, 23, 54, 88, 93, 94, 102, 112, 118
10/17/2022	4.5: 3, 7, 15, 22, 24, 38, 61, 63 4.6: 5, 8, 21, 24
10/19/2022	4.7: 5, 9, 15, 21, 31, 47, 57, 63, 67, 71, 83, 94 5.1: 4, 17, 23
10/24/2022	5.2: 1, 3, 5, 8, 9, 12-15, 17, 19, 21, 25, 33, 39 5.3: 5, 9, 15, 18, 19, 23, 28, 41, 43, 45, 49, 53, 59, 71, 73-75, 81, 88, 97
10/26/2022	<b>Exam 2</b>
10/31/2022	5.4: 1-9(odd), 12-20(even), 21-31(odd), 34, 36-38, 40, 41 47, 54, 55, 64, 65, 68
11/2/2022	5.5: 2-6(even) 8,9, 11, 13, 15-21 (odd) 24, 25, 27, 29, 31, 34, 38, 40, 43-51(odd), 55, 62, 63
11/7/2022	5.6: 1, 3, 6, 7, 10, 12, 15, 17, 20, 24, 25, 29, 35, 43, 59, 63, 75, 79, 81-83, 86-88, 90a
11/9/2022	7.2: 1, 4, 6, 8, 9, 12-15, 17, 20, 21, 23, 25, 26, 27, 36, 37, 39, 42, 43, 45, 47, 49, 51, 53, 54, 65, 67, 70, 81, 84 7.3: 1, 5, 17, 23, 27, 29, 32, 34, 39, 42, 43, 47, 50, 51, 57, 71, 87, 91, 105, 109, 115, 119, 135a, 136 p.432: 123
11/14/2022	7.4: 1-11(odd), 28, 39, 44 7.5b: 51-57(odd), 61, 71, 77, 80, 86, 88
11/16/2022	7.7: 1, 5, 11-13, 17, 21, 44, 45, 77, 86 7.8: 2, 3, 6, 7, 9, 14, 18, 20
11/21/2022	8.1: 3, 5, 8, 10, 11, 13, 24-27,30,31-41(odd), 45, 47, 49, 51, 61, 65, 66, 68 8.2: 2, 3, 6, 8, 12, 14, 18, 19, 23, 25, 28, 29-39(odd), 42, 44, 45, 47, 49, 51, 62, 72
11/23/2022	<b>Exam 3</b>
11/28/2022	8.3: 1-9(odd), 12, 13, 15-17, 19, 22, 23, 25, 29, 31-39(odd), 40, 41, 43, 45, 48, 49, 57, 58 8.4: 1, 3-7, 11, 15, 17, 21, 29, 41, 51, 59
11/30/2022	8.7: 1-4, 5-13(odd), 16, 18, 19, 21-25, 27, 29, 32, 34, 35-55(odd), 56, 58, 60, 61, 63, 65, 66, 73, 75ab p.494: 41, 42, 45, 47
12/5/2022	8.5: 7, 28, 37, 44, 56, 67 8.6: 3, 9, 25, 28, 38
12/7/2022	Study Day
12/14/2022	<b>Final Exam</b>