

**MA 113****Calculus II**

- Course Description:** Applications of definite integrals: area, volume, improper integrals, work, arc length, surface area, centroid. Polar coordinates. Parametric curves in two and three dimensions: velocity, speed and acceleration. Partial derivatives and the chain rule, properties of the gradient. Maxima and minima. Sequences and series: convergence of sequences and series, Taylor and Maclaurin series, power series. *4 credits; 5 contact hours.*  
*Prerequisite: Ma111; prerequisite or corequisite: Ma110.*
- Course Objectives:**
1. Apply the definite integral to solve problems in geometry, physics, and other fields.
  2. Introduce the differential calculus of functions of several variables and solve multivariable constrained optimization problems.
  3. Develop the mathematical theory of sequences and series.
- Instructor:** Mili Shah (mili@cooper.edu)  
41 Cooper Square, Room 311  
<http://faculty.cooper.edu/mili>
- Meetings:** Recitation: Tuesday 2:00PM - 2:50PM, LL101  
Lecture: Wednesday 02:00PM - 3:50PM, 505  
Lecture: Thursday 1:00PM - 2:50PM, 502
- Office Hours:** Tuesday 11:00AM-11:50AM  
Wednesday 1:00PM-1:50PM  
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: Thursday, February 10 (20% of final grade)  
Exam 2: Thursday, March 10 (20% of final grade)  
Exam 3: Thursday, April 14 (20% of final grade)  
Final Exam: Wednesday, May 11 (30% of final grade)  
*Note: I reserve the right to adapt quiz and exam dates as well as modality.*
- Assessment:** Quizzes will be posted on the website  
<https://webwork.runestone.academy/webwork2/cooper-shah-ma-113-spring-2022/>  
Your initial login is your Cooper username and your password is your Cooper ID number. The quizzes will be timed take-home.
- 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>  |
|-------------|--|
| 01/19       | 11.1: 1,3,5,12,17,21,33,34,35,38,39<br>11.2: 3,7,13,21,22,23,25,27,41  |
| 01/20       | 6.3: 1,3,5,7,9,21,22,24,29<br>12.1: 28,31,59,60,63,65  |
| 01/26       | 12.2: 13,33,41,45,51,55<br>12.3: 16,18,25,45   |
| 01/27       | 12.4: 16,26,27,28,29,33<br>12.5: 9,20,21,31,35,42,46,55,65,67,71,74  |
| 02/02       | 13.1: 1,3,9,11,19,24,27<br>13.2: 1,3,5,7,9,11,13,15,17,21,24,28,31,44  |
| 02/03       | 13.3: 1,3,9,11,13,17,18,19<br>13.4: 1,3,5,6,7,9,11,19,20,23,25   |
| 02/09       | Modified Schedule  |
| 02/10       | <b>Exam 1</b>  |
| 02/16       | 13.5: 1,3,7,9,17,18,19,23,26,28<br>6.1: 2,5,7,11,19,21,27,37,45,49,51,56,59  |
| 02/17       | 6.2: 1,5,7,9,23ac,28,29,34,39,41,44<br>6.4: 1,3,5,7,9,13,15,17,24,28,31  |
| 02/23       | 11.2: 31,34,35,37,44<br>6.5: 3,10,15,22,25,27,30,34,39,42,45   |
| 02/24       | 6.6: 1,3,5,13,25,27,29,33,37,43<br>11.3: 1,3,5,7,11,13,15,27,35,47,55,59,61,68   |
| 03/02       | 11.4: 3,8,13,16,17,19,21a,23a,27<br>11.5: 1,3,6,9,11,16,19,20,21,23,30ab,31  |
| 03/03       | 11.6: 1,2,3,4,5,6,7,8,9,15,19,23,25,29,33,36,53,57,63,69,70,73,77,81<br>11.7: 1,3,5,7,9,13,19,21,23,25,30,31,37,39,41,45,50,57,75a   |
| 03/09       | 13.6: 1,4,6,7,8  |
| 03/10       | <b>Exam 2</b>  |
| 03/16       | Spring Break   |
| 03/17       | Spring Break   |
| 03/23       | 10.1: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45<br>47,49,51,54,56,59,60,63,68,69,71,80,88,81,89,93,97,98,101,104a,107,113,119,133a                     |
| 03/24       | 10.2: 9,13,21,25,27,29,31,33,37,41,45,55,58,65,69,73,79,83,88,89,93,94<br>10.3: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43a,45,49,57                       |
| 03/30       | 10.4: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,57,58,60<br>10.5: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,47,53,56,61,63 |
| 03/31       | 10.6: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,53,55,57,59,64,66<br>10.7: 1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,39,45,47,49,50,55,56       |
| 04/06       | 10.8: 1,3,7,11,19,21,27,32,35,39,41<br>10.9: 1,7,9,11,27,29,37,41,43,45,46,48,52   |
| 04/07       | 10.10: 3,5,15,17,19,25,29,33,41,44,52,56,59a<br>App 7: 1,3,5,7,9,11,13,17,23,29,30 (p.604: 67,68,69,70,71,73)  |
| 04/13       | 14.1: 5,7,9,11,13,15,17,19,21,23,25,31,32,33,34,35,36,49,51,53,57,59,61,62,65,67<br>12.6: 1,2,3,4,5,6,7,8,9,10,11,12,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47   |
| 04/14       | <b>Exam 3</b>  |
| 04/20       | 14.2: 1,3,5,7,9,15,17,19,21,27,31,35,34,39,43,45,47,49,53,54,56,60,61,63,70<br>14.3: 3,6,17,21,29,39,43,49,51,58,60,62,63,66,69,75,83,90                                     |
| 04/21       | 14.4: 3,11,14,19,25,29,35,39,41,44,50,52 (Stein 14.11: 5,7,8,11)<br>14.5: 1,3,5,7,9,11,13,15,21,27,29,32,33,34,35,38   |
| 04/27       | 14.6: 1,3,5,7,9,11,17,19,23,25,35,43,51,54,57,59,66,67<br>14.9: 5,9,12   |
| 04/28       | 14.7: 3,5,9,15,31,35,43,45,47,49,51,59,61,65<br>14.8: 1,5,9,13,21,29,32,33,35,42,43  |
| 05/04       | Review   |
| 05/05       | Study Day  |
| 05/11       | <b>Final Exam</b>  |