

## MATH 211: Calculus III A

### *Fall 2018 Course Syllabus*

**NJIT Academic Integrity Code:** All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

### COURSE INFORMATION

**Course Description:** Topics include vectors, curvature, partial derivatives, multiple integrals, line integrals, and Green's theorem. Students who are considering a major in Mathematical Sciences or who are undecided about their major should take **MATH 213**.

**Number of Credits:** 3

**Prerequisites:** **MATH 112** with a grade of C or better or **MATH 133** with a grade of C or better.

#### Course-Section and Instructors

| Course-Section | Instructor               |
|----------------|--------------------------|
| Math 211-001   | Professor S. Mahmood     |
| Math 211-003   | Professor J. Zaleski     |
| Math 211-005   | Professor P. Ward        |
| Math 211-007   | Professor M. Booty       |
| Math 211-009   | Professor W. Choi        |
| Math 211-013   | Professor C. Turc        |
| Math 211-017   | Professor R. Kelly       |
| Math 211-027   | Professor M. Potocki-Dul |
| Math 211-029   | Professor P. Parekh      |
| Math 211-101   | Professor P. Ward        |
| Math 211-103   | Professor T. M. Taklo    |

**Office Hours for All Math Instructors:** [Fall 2018 Office Hours and Emails](#)

#### Required Textbook:

|       |  |
|-------|--|
| Title | <i>Thomas' Calculus: Early Transcendentals</i> |
|-------|--|

|           |                      |
|-----------|----------------------|
| Author    | Hass, Heil, and Weir |
| Edition   | 14th                 |
| Publisher | Pearson              |
| ISBN #    | 978-0134768496       |
| Notes     | w/ MyMathLab         |

**University-wide Withdrawal Date:** The last day to withdraw with a **W** is **Monday, November 12, 2018**. It will be strictly enforced.

## COURSE GOALS

### Course Objectives

- Apply previously developed skills learned in Calculus to learn Multivariable Calculus and Vectors.
- Cover Vectors, Partial Derivatives, Multiple Integrals and Vector Fields to prepare students for further study in technological disciplines and more advanced mathematics courses.
- Cover relevant applications in science and engineering to illustrate the utility of learning these topics.
- Use mathematical software, in problem solving, to allow the solution of more complex problems and provide visualization of the mathematical concepts in three dimensions.

### Course Outcomes

- Prepare students for further study in technological disciplines and more advanced mathematics courses.
- Illustrate the utility of learning Multivariable Calculus to solve problems in engineering and the sciences.
- Demonstrate mastery of the topics covered by testing with common exams and common grading.

## POLICIES

**DMS Course Policies:** All DMS students must familiarize themselves with, and adhere to, the **Department of Mathematical Sciences Course Policies**, in addition to official **university-wide policies**. DMS takes these policies very seriously and enforces them strictly.

**Grading Policy:** The final grade in this course will be determined as follows:

|                        |     |
|------------------------|-----|
| Homework and Quizzes   | 20% |
| Common Midterm Exam I  | 25% |
| Common Midterm Exam II | 25% |
| Final Exam             | 30% |

Your final letter grade will be based on the following tentative curve.

|    |          |   |         |
|----|----------|---|---------|
| A  | 90 - 100 | C | 60 - 66 |
| B+ | 81 - 89  | D | 57 - 59 |
| B  | 74 - 80  | F | 0 - 56  |
| C+ | 67 - 73  |   |         |

**Attendance Policy:** Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the **Math Department's Attendance Policy**. This policy will be strictly enforced.

**Homework and Quiz Policy:** The homework assignments are in the syllabus and online. In order to do the assignments you need to have a student access code. You can get an access code with a new book purchase that

is bundled with MyMathLab or by buying the code separately at the campus bookstore. If you buy a new book from another source make sure it is bundled with MyMathLab. In addition on the first day of class your course instructor will give you an additional code needed to access the homework assignments.

A quiz based on the homework problems will be given each week online or in class. There will be a short quiz every week on the material covered during the previous week. All of the quizzes will be graded. The homework and quizzes are intended to develop your problem-solving skills and to prepare you for the exams. The quiz and homework grades will be a significant component of your course grade.

#### How to Get Started with MyMathLab:

- [http://m.njit.edu/Undergraduate/UG-Files/MML\\_Getting\\_Started.pdf](http://m.njit.edu/Undergraduate/UG-Files/MML_Getting_Started.pdf)
- [http://m.njit.edu/Undergraduate/UG-Files/Technology\\_Tips.pdf](http://m.njit.edu/Undergraduate/UG-Files/Technology_Tips.pdf)

**Exams:** There will be two common midterm exams held during the semester and one comprehensive common final exam. Exams are held on the following days:

|                        |                        |
|------------------------|------------------------|
| Common Midterm Exam I  | October 10, 2018       |
| Common Midterm Exam II | November 14, 2018      |
| Final Exam Period      | December 15 - 21, 2018 |

The time of the midterm exams is **4:15-5:40 PM** for daytime students and **5:45-7:10 PM** for evening students. The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the [Math Department's Examination Policy](#). This policy will be strictly enforced.

**Makeup Exam Policy:** To properly report your absence from a midterm or final exam, please review and follow the required steps under the DMS Examination Policy found here:

- [http://math.njit.edu/students/policies\\_exam.php](http://math.njit.edu/students/policies_exam.php)

**Cellular Phones:** All cellular phones and other electronic devices must be switched off and put away during all class times.

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## ADDITIONAL RESOURCES

**Math Tutoring Center:** Located in the Central King Building, Lower Level, Rm. G11 (See: [Fall 2018 Hours](#))

**Accommodation of Disabilities:** Disability Support Services (DSS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director of Disability Support Services at [973-596-5417](tel:973-596-5417) or via email at [lyles@njit.edu](mailto:lyles@njit.edu). The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- <http://www5.njit.edu/studentssuccess/disability-support-services/>

**Important Dates** (See: [Fall 2018 Academic Calendar](#), Registrar)

| Date               | Day | Event                        |
|--------------------|-----|------------------------------|
| September 4, 2018  | T   | First Day of Classes         |
| September 10, 2018 | M   | Last Day to Add/Drop Classes |

|                        |        |                       |
|------------------------|--------|-----------------------|
| November 12, 2018      | M      | Last Day to Withdraw  |
| November 20, 2018      | T      | Thursday Classes Meet |
| November 21, 2018      | W      | Friday Classes Meet   |
| November 22 - 25, 2018 | R - Su | Thanksgiving Recess   |
| December 12, 2018      | W      | Last Day of Classes   |
| December 13 & 14, 2018 | R & F  | Reading Days          |
| December 15 - 21, 2018 | Sa - F | Final Exam Period     |

## Course Outline

| Lecture | Section | Topic   | HW Assignment   |
|---------|---------|---|---|
| 1       | 12.1-   | 3-Dimensional Coordinate Systems and              | p. 717: 13, 21, 26, 37, 55, 61  |
|         | 12.2    | Vectors   | p. 726: 7, 13, 15, 17, 25, 29, 33, 39, 45, 49                         |
| 2       | 12.3    | Dot Product                                       | p. 734: 3, 7, 11, 13, 16, 26, 29, 30, 43, 45                          |
| 3       | 12.4    | Cross Product                                     | p. 741: 7, 15, 18, 21, 23, 25, 39, 43, 46, 48                         |
| 4       | 12.5    | Lines and Planes in Space                         | p. 749: 3, 9, 17, 23, 27, 29, 35, 41, 55, 57, 63, 65, 69              |
| 5       | 12.6    | Cylinders and Quadric Surfaces                    | p. 755: 7, 9, 11, 14, 19, 23, 33, 41                                  |
| 6       | 13.1    | Curves and Tangents in Space                      | p. 770: 5, 11, 13, 15, 19, 25, 26, 38                                 |
| 7       | 13.2    | Integrals of Vector Functions: Projectile Motion  | p. 777: 1, 7, 11, 17, 21, 23, 25, 29, 31                              |
| 8       | 13.3    | Arc Length of Space Curves                        | p. 784: 1, 6, 7, 11, 13, 14, 18                                       |
| 9       | 14.1    | Functions of Several Variables                    | p. 812: 5, 11, 13, 14, 19, 23, 25, 27, 39, 49, 53, 59, 61             |
| 10      | 14.3    | Partial Derivatives                               | p. 832: 5, 13, 17, 23, 25, 31, 37, 43, 48, 57, 68, 75, 77, 85, 89, 93 |
| 11      | *       | <b>REVIEW FOR EXAM 1</b>                          | ****  |
|         | *       | <b>COMMON EXAM 1: WEDNESDAY, OCTOBER 10, 2018</b> |   |
| 12      | 14.4    | The Chain Rule                                    | p. 842: 3, 5, 7, 9, 27, 31, 33, 37, 39, 41, 52                        |
| 13      | 14.5    | Directional Derivatives and Gradients             | p. 852: 5, 9, 11, 15, 17, 19, 23, 27, 31, 33, 37, 38                  |
| 14      | 14.6    | Tangent Planes and Differentials                  | p. 860: 1, 5, 11, 17, 21, 23, 31, 43, 45, 54, 55                      |
| 15      | 14.7    | Extrema and Saddle Points                         | p. 870: 3, 7, 19, 21, 27, 31, 35, 41, 51, 53, 59                      |
| 16      | 14.8    | Lagrange Multipliers                              | p. 879: 3, 7, 13, 17, 21, 23, 25, 30, 31                              |
| 17      | 15.1    | Double and Iterated Integrals over Rectangles     | p. 901: 3, 9, 10, 11, 19, 21, 23, 29, 31                              |
| 18      | 15.2-   | Double Integrals over General Regions and         | p. 909: 7, 13, 15, 35, 39, 43, 49, 51, 53, 57                         |
|         | 15.3    | Area by Double Integration                        | p. 914: 3, 9, 11, 21  |
| 19      | 15.4    | Double Integrals in Polar Form                    | p. 919: 7, 11, 13, 17, 23, 25, 29, 37                                 |
| 20      | 15.5-   | Triple Integrals in Rectangular Coordinates and   | p. 929: 7, 11, 15, 23, 25, 27, 31, 33                                 |

|        |      |  |  |
|--------|------|--|--|
|        | 15.6 | Moments and Center of Mass                                     | p. 939: 3, 4, 13   |
| 21     | *    | <b>REVIEW FOR EXAM 2</b>                                       | ****   |
|        | *    | <b>COMMON EXAM 2: WEDNESDAY, NOVEMBER 14, 2018</b>             |  |
| 22     | 15.7 | Triple Integrals in Cylindrical Coordinates                    | p. 949: 25, 29, 31, 33, 39, 41, 65, 77, 79, 81                     |
| 23     | 16.1 | Line Integrals   | p. 974: 7, 9, 11, 15, 19, 21, 23, 29, 33                           |
| 24     | 16.2 | Vector Fields and Line Integrals: Work, Circulation and Flux   | p. 986: 9, 11, 15, 19, 21, 23, 25, 27, 29, 33                      |
| 25     | 16.3 | Path Independence, Conservative Fields and Potential Functions | p. 998: 3, 7, 9, 15, 19, 21, 23, 27, 29                            |
| 26, 27 | 16.4 | Green's Theorem in the Plane                                   | p. 1010: 3, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 32, 34, 39 |
| 28     | **   | <b>REVIEW FOR FINAL EXAM</b>                                   | *****  |
|        | ***  | <b>FINAL EXAMS: DECEMBER 15- 21, 2018</b>                      | *****  |

*Updated by Professor M. Booty - 9/7/2018*  
*Department of Mathematical Sciences Course Syllabus, Fall 2018*

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