MATH 112: Calculus II
Fall 2016 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 integration, applications of integration, series, exponential and logarithmic functions, transcendental functions, polar coordinates, and conic sections.

Number of Credits: 4

Prerequisites: MATH 111 with a grade of C or better or MATH 132 with a grade of C or better.

Course-Section and Instructors

Course-Section	Instructor
Math 112-001	Professor V. Barreto-Aranda
Math 112-003	Professor J. Ratnaswamy
Math 112-005	Professor R. Brown
Math 112-007	Professor R. Brown
Math 112-009	Professor P. Sanaei
Math 112-011	Professor J. Ratnaswamy
Math 112-013	Professor J. Porus
Math 112-015	Professor V. Barreto-Aranda
Math 112-101	Professor N. Tsipenyuk
Math 112-103	Professor P. Ward

Office Hours for All Math Instructors: Fall 2016 Office Hours and Emails

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Thomas
Edition	13th

Publisher	Pearson
ISBN #	978-0321981677
Notes	w/ MyMathLab

University-wide Withdrawal Date:The last day to withdraw with a **W** is Monday, November 7, 2016. It will be strictly enforced.

COURSE GOALS

Course Objectives

- Students should (a) develop greater depth of understanding of integration and its importance in scientific and engineering applications, (b) learn about series, including their convergence properties and their use in representing functions, (c) gain experience in the use of approximation in studying mathematical and scientific problems and the importance of mathematically understanding and evaluating the accuracy of approximations, (d) learn new ways of mathematically representing curves and how to use calculus in these settings, and (e) learn alternative coordinate systems which are natural for many problems and learn how calculus can be applied in these systems.
- Students should gain an appreciation for the importance of calculus in scientific, engineering, computer, and other applications.
- Students should gain experience in the use of technology to facilitate visualization and problem solving.

Course Outcomes

- Students have improved logical thinking and problem-solving skills.
- Students have a greater understanding of the importance of calculus in science and technology.
- Students are prepared for further study in mathematics as well as science, engineering, computing, and other areas.

Course Assessment: The assessment of objectives is achieved through homeworks, quizzes, and common examinations with 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:

Quizzes	8%
Online Homework	8%
Common Midterm Exam I	18%
Common Midterm Exam II	18%
Common Midterm Exam III	18%
Final Exam	30%

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

A	90 - 100	C	70 - 74
B+	85 - 89	D	60 - 69
B	80 - 84	F	0 - 59

C+	75 - 79		

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. Students are expected to attend class. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework Policy: Homework is a requirement for this class. Online homework will be completed with MyMathLab, which comes with a new copy of the textbook. Access to it can also be purchased directly from the website.

MATLAB Assignments: MATLAB is a mathematical software program that is used throughout the science and engineering curricula. Two MATLAB assignments will be given during the semester; tutors are available to help students having difficulties in accordance with a posted schedule.

Quiz Policy: Quizzes will be given approximately once a week throughout the semester. They will be based on the lecture, homework and the in-class discussions. There will be 8-12 assessments given throughout the semester.

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

Common Midterm Exam I	September 28, 2016
Common Midterm Exam II	October 26, 2016
Common Midterm Exam III	November 30, 2016
Final Exam Period	December 16 - 22, 2016

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

Mandatory Tutoring Policy: Based upon academic performance indicating a significant gap in understanding of the course material, students may receive a notice of being assigned to mandatory tutoring to assist in filling the gap. A student will have 2 points deducted from the course average for each instance in which the required tutoring is not completed by the stated deadline.

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

ADDITIONAL RESOURCES

Math Tutoring Center: Located in Cullimore, Room 214 (See: Fall 2016 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 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. 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/studentsuccess/disability-support-services/

Important Dates (See:)

Date	Day	Event
September 6, 2016	T	First Day of Classes
September 12, 2016	M	Last Day to Add/Drop Classes
November 7, 2016	M	Last Day to Withdraw
November 22, 2016	T	Thursday Classes Meet
November 23, 2016	W	Friday Classes Meet
November 24 - 27, 2016	R - Su	Thanksgiving Holiday, University Closed
December 14, 2016	W	Last Day of Classes
December 15, 2016	R	Reading Day
December 16 - 22, 2016	F - R	Final Exam Period

Course Outline

Lecture	Section	Topic	Assignment in MyMathLab	Assignment to Hand-in
1	5.6	Review of Integration, u/du substitution	Section 5.4 #s: 1,23,31 Section 5.5 #s: 18,20,21,25,33,43,47,59 Section 5.6 #s: 27,29,37,53	
2	6.1	Volumes Using Cross Sections	5,9,15,17,21,28,31,35	Section 6.1 #s: 8,10,16,25 (for 16 & 25 clearly show a sketch of the revolved figure)
3	6.1	Continue Volumes Using Cross Sections	39,40,41,43,45,47,49,51,53,57	Section 6.1 #: 62ab
4	6.2	Volumes Using Cylindrical Shells	3,5,9,11,17,19,21,25,29,33,48	
5	6.3	Arc Length	1,2,3,4,5,7,13,25	
6	6.4	Areas of Surfaces of Revolution	9,13,15,17,19,21,24	
7	6.5	Work	1,3,4,5,6,7,9	
8	6.5	Work	13,15,16,17,18	Section 6.5 #s: 2,8,19
9		**REVIEW FOR EXAM #1**		
10	8.1	Basic Integration Formulas (derive derivatives and integrals for sinh(x), cosh(x) from 7.3)	Section 8.1 #s: 5,9,10,13,15,27,33,36,38 Section 7.3 #s: 6,7,9,13,17,41	
11	8.2	Integration by Parts	3,5,9,11,13,23,27,29,33,35,37,39,45,47,53,55	
12	8.3	Trigonometric Integrals	7,9,11,17,19,21,27,31,35,37,38,39,45,64,65,67,71	
13	8.4	Trigonometric	5,7,11,17,19,23,29,35,37,39,41,	Section 8.4 #s: 1,12,20,44,57

		Substitution	43,53	
14	8.4/ 8.5	Continue Trig Substitution & Start Integration by Partial Fractions	Section 8.4: Continue above assignment Section 8.5: 3,7,11,14,16,17,19	
15	8.5	Integration of Rational Functions by Partial Fractions	23,25,27,29,33,35,39,41,45,55	Section 8.5 #s: 9,18,30,31,38
16	8.7	Numerical Integration	3,7,13,17,21,28	
MATLAB #1 ASSIGNED: DUE OCTOBER 31ST					
17	8.8	Improper Integrals	1,4,6,7,9,11,13,16*,17,21,23,25,31	
18	8.8	Improper Integrals	35,39,41,47,53,55,59,61,63,67,69	
19	10.1	Sequences	3,7,9,15,17,21,23,25,31,35,37,41,45, 49,51,53,61,65,67,69,79,81,87,89,99	
20	10.2	Infinite Series	5,7,13,29,31,37,41,43,53,55,59,61, 63,65,69,71,90,91	
21		**REVIEW FOR EXAM #2**		
22	10.2/ 10.3	Continue Infinite Series & Start Integral Test	Continue above assignment	
23	10.3/ 10.4	Finish Integral Test & start Comparison Tests	No online homework	Section 10.3 #s: 3,6,9,11,13,19,20,23,25,27,33, 35,36
24	10.4	Comparison Tests	No online homework	Section 10.4 #s: 1,4,5,12,18,19,21,23,25, 28,31,32,34,36,37,39,40,41,43, 51,56 **MATLAB #1 IS DUE**
25	10.5	Root and Ratio Tests	No online homework	Section 10.5 #s: 5,7,9,18,19,21,29,31,35,38, 42,55,56,57,58,59
26	10.6	Alternating Series, Absolute vs. Conditional Convergence	No online homework	Section 10.6 #s: 5,7,9,10,11,12,13,15,19,21, 23,24,25
27	10.6	Alternating Series, Absolute vs. Conditional Convergence	No online homework	Section 10.6 #s: 27,30,34,35,37,39,41,44,47,50*, 51,53
28		FLEX DAY: Use on Series Convergence, Power Series or Taylor Series as needed		
29	10.7	Power Series	3,5,9,11,15,19,21,23,27	
30	10.7	Power Series	Continue above assignment	Section 10.7 #s: 22,24,31,32,37,55
31	10.8	Taylor and McLaurin Series	3,5,8,9,11,15,18,23,29,31,35	
MATLAB #2 ASSIGNED: DUE DECEMBER 2ND					

32	10.9	Convergence of Taylor Series	1,9,10,11,13,19,20,25	
33	10.9	Convergence of Taylor Series	29,31,35,37,39,41,43,48,49	
34	10.1	Applications of Taylor Series	23,25,29,31,35,39,45,49,55,61	
35		**REVIEW FOR EXAM #3**		
36	11.1/ 11.2	Parametrization of Plane Curves & Start Calculus with Parametric Curves	Section 11.1 #s: 1,3,5,7,9,16, 19,21,25,27,31,33,39	
37	11.2	Calculus with Parametric Curves	7,9,12,13,15,21,26,28,29	**MATLAB #2 IS DUE**
38	11.3	Polar Coordinates	1,5,7,13,17,23,27,32,37,47, 51,59,60,61	
39	11.4	Graphing in Polar Coordinates	No online homework	1,7,9,17,18,19,21,22,23,25,27
40	11.5	Areas and Lengths in Polar Coordinates	1,7,11,12,13,15,17	
41	11.5	Areas and Lengths in Polar Coordinates	21,23,25,27,28	
42		**CATCH UP AND REVIEW**		
		FINAL EXAM		