MATH 112: Calculus II
Summer 2019 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 112-031	Professor M. Potocki-Dul
Math 112-032	Professor M. Potocki-Dul
Math 112-131	Professor E. Dupay

Office Hours for All Math Instructors: Summer 2019 Office Hours and Emails

Required Textbook:

Title	*Thomas' Calculus: Early Transcendentals*
Author	Thomas
Edition	14th
Publisher	Pearson
ISBN #	978-0134768496 (bound) 9780134768762 (looseleaf)
Notes	w/ MyMathLab

Withdrawal Date: Please see the Summer 2019 Academic Calendar for the last day to withdraw based on the summer session you are registered for.

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:

Homework and Quizzes	15%
Common Midterm Exam I	25%
Common Midterm Exam II	25%
Final Exam	35%

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

A	88 - 100	C	65 - 71
B+	83 - 87	D	60 - 64
B	77 - 82	F	0 - 59
C+	72 - 76		

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 Policy: Calculus is learned by solving problems. In Math 112, there are two kinds of homework assignments: 1) assignments which are written out by hand and turned in, and 2) assignments which are completed online. The homework assignments are listed on the syllabus; the * superscript denotes those problems which constitute the hand-in assignments while the remaining problems constitute the online assignments.

The online assignments can be completed at **WWW.MYMATHLAB.COM** or **WWW.COURSECOMPASS.COM**. In

order access the online assignments you need to have a student access code. Access codes are included with new book that is bundled with MyMathLab; codes can be purchased separately from the textbook at the campus bookstore or online at the course website. 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 online assignments. **NOTE: Homework Assignments are DUE frequently (at least weekly) at the dates and times specified online and by your instructor.**

How to Get Started with MyMathLab:

- **Getting Started**
- **Technology Tips**

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 are given in class on a frequent basis (at least weekly). All of the quizzes will be graded. The homework and quizzes are intended to develop your problem-solving skills and to help you prepare for the exams.

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	June 12, 2019
Common Midterm Exam II	July 17, 2019
Final Exam	August 5, 2019

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

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

ADDITIONAL RESOURCES

Math Tutoring Center: Located in the Central King Building, Room G11 (Summer Hours: TBA)

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: Summer 2019 Academic Calendar, Registrar)

Date	Event
May 20, 2019	First Day of Classes
May 21, 2019	Last Day to Add/Drop Classes for **FIRST, MIDDLE, AND FULL**
May 27, 2019	University Closed for Memorial Day
June 24, 2019	Last Day of **FIRST SUMMER SESSION**

July 1, 2019	First Day of Second Summer Session
July 4-5, 2019	University Closed for Independence Day
July 15, 2019	Last Day of **MIDDLE SUMMER SESSION**
August 6, 2019	Last Day of **FULL AND SECOND SUMMER SESSIONS**

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	1, 5, 9, 17, 19, 23, 30, 33, 37, 41, 45, 47, 49, 51, 53, 55, 59	10, 38, 54
3	6.2	Volumes Using Cylindrical Shells	3, 5, 9, 11, 17, 19, 21, 25, 29, 33	42, 47, 48
4	6.3	Arc Length	1, 2, 3, 4, 5, 7, 15, 27	13, 28
5	6.4	Areas of Surfaces of Revolution	9, 13, 15, 17, 19, 21, 24	32
6	6.5	Work	1, 5, 7, 8, 9, 11, 15, 17, 19, 20	10, 21
7	7.3	Hyperbolic Functions	2, 7, 9, 15, 17, 23, 43, 45, 47, 49, 53, 55, 57, 81	80
	8.1	Using Basic Integration Formulas	3, 5, 9, 10, 13, 15, 27, 33, 36, 38	34, 37
8	8.2	Integration by Parts	3, 5, 11, 13, 23, 27, 29, 33, 35, 37, 39, 45, 47, 59	28, 38, 46, 57
9	8.3	Trigonometric Integrals	7, 9, 11, 17, 19, 21, 27, 31, 35, 37, 38, 39, 45, 65, 71	63, 64, 68
10	8.4	Trigonometric Substitution	1, 5, 7, 11, 17, 19, 23, 29, 35, 37, 39, 41, 43, 47, 43, 53	12, 20, 44, 50
11	8.5	Integration of Rational Functions by Partial Fractions	3, 7, 11, 14, 16, 17, 19, 23, 25, 27, 29, 33, 35, 39, 41, 45, 55	18, 30, 31, 38
12	8.7	Numerical Integration	3, 7, 13, 17, 21, 28	
13	8.8	**REVIEW FOR EXAM 1**		
14		**EXAM 1: 6/12/19**		
15	8.8	Improper Integrals	1, 4, 6, 7, 9, 11, 13, 17, 21, 23, 31, 33, 39, 43, 45, 51, 55, 57, 59, 63, 65, 67, 71, 73	16, 28, 58, 68, 75
16	10.1	Sequences	3, 7, 9, 15, 17, 21, 23, 25, 35, 39, 41, 45, 49, 53, 55, 57, 65, 69, 71, 79, 89, 91, 97, 99, 109	52, 54
17	10.2	Infinite Series	3, 5, 7, 13, 29, 33, 35, 41, 45, 47, 57, 59, 63, 65, 69, 77, 79, 98	74, 80, 84, 90, 67, 68
18	10.3	Integral Test	3, 6, 9, 13, 15, 21, 27, 29, 31, 33, 35, 37, 55, 57	22, 36, 38
19	10.4	Comparison Tests	1, 5, 18, 19, 21, 23, 25, 28, 31, 32, 34, 37, 39, 41, 43, 47, 51, 58	36, 40, 46

20	10.5	Root and Ratio Tests	5, 7, 9, 18, 19, 21, 29, 31, 35, 42, 57, 59, 61, 70	38, 58, 60
21	10.6	Alternating Series, Absolute vs. Conditional Convergence	5, 7, 9, 10, 11, 13, 15, 19, 21, 23, 25, 27, 34, 35, 37, 39, 41, 44, 47, 51, 53, 63, 71, 73	12, 24, 30, 42, 50
22	10.7	Power Series	3, 5, 9, 11, 15, 19, 21, 23, 27, 31, 37, 39, 43, 45, 53, 54	22, 24, 32, 55
23	10.8	Taylor and McLaurin Series	3, 5, 8, 9, 11, 15, 18, 25, 31, 33, 37	36
24	10.9	Convergence of Taylor Series	1, 9, 10, 13, 15, 21, 22, 27, 31, 39, 41, 43, 45, 47, 53	18, 28, 33, 40.52
25		**REVIEW FOR EXAM II**		
26		**EXAM II: 7/17/19**		
27	10.1	Applications of Taylor Series	1, 3, 5, 13, 23, 25, 29, 31, 35, 39, 45, 49, 55, 61	26, 40
28	11.1	Parametrization of Plane Curves	1, 3, 5, 7, 9, 16, 29, 31, 35, 37, 41, 43, 49	12, 42, 50
29	11.2	Calculus with Parametric Curves	7, 9, 12, 13, 15, 21, 26, 28, 29, 31, 33, 35	14, 47
30	11.3	Polar Coordinates	1, 5, 7, 13, 17, 23, 27, 32, 37, 47, 51, 59, 60, 61	38, 42
31	11.4	Graphing in Polar Coordinates	1, 7, 9, 13, 17.19, 29, 31	18
32	11.5	Areas and Lengths in PolarCoordinates	1, 7, 11, 13, 15, 17, 21, 23, 27, 28	10, 24
33		**CATCH UP AND REVIEW**		
		FINAL EXAM: 8/5/19		