NJIT New Jersey's Science & Technology University

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 651: Methods of Applied Mathematics I
Fall 2018 Graduate 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: A survey of mathematical methods for the solution of problems in the applied sciences and engineering. Topics include: ordinary differential equations and elementary partial differential equations. Fourier series, Fourier and Laplace transforms, and eigenfunction expansions.

Number of Credits: 3

Prerequisites: MATH 222 or departmental approval.

Course-Section and Instructors

Course-Section	Instructor
Math 651-001	Professor R. Moore

Office Hours for All Math Instructors: Fall 2018 Office Hours and Emails

Required Textbooks: ***(NO BOOK)***

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

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	40%
Midterm Exam	30%
Final Exam	30%

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

A	90 - 100	**C**	70 - 75
B+	86 - 89	**D**	60 - 69
B	80 - 85	**F**	0 - 59
C+	76 - 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.

Homework Policy: Homework assignments/projects will be given in class and collected every two weeks. Each assignment must be handed in at the beginning of class on the due date. Late assignments are NOT accepted without a documented excuse or a prior arrangement.

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

Midterm Exam	October 24, 2018
Final Exam Period	December 15 - 21, 2018

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

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

ADDITIONAL RESOURCES

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. 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/studentsuccess/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

Week	Dates	Topic
1	9/5 & 9/7	Linear Ordinary Differential Equations: Theory (existence & uniqueness)
2	9/12 & 9/14	Linear ODEs: Methods for homogeneous ODEs
3	9/19 & 9/21	Linear ODEs: Methods for inhomogeneous ODEs
4	9/26 & 9/28	Local analysis of Linear ODEs (series solutions)
5	10/3 & 10/5	Sturm-Liouville Boundary Value Problems
6	10/10 & 10/12	Nonlinear ODEs
7	10/17 & 10/19	Linear Partial Differential Equations: Introduction and classification.
8	10/24 & 10/26	**MIDTERM (OCTOBER 24)**, Wave equation
9	10/31 & 11/2	Characteristics and quasilinear equations
10	11/7 & 11/9	Heat equation and separation of variables
11	11/14 & 11/16	Solution by eigenfunction expansion
12	11/21	Laplace's equation **(FOLLOWS FRIDAY SCHEDULE, NO CLASS 11/23)**
13	11/28 & 11/30	Laplace's equation, Transform methods
14	12/5 & 12/7	Transform methods, cont.
15	12/12	Review and/or additional topics

Updated by Professor R. Moore - 9/1/2018
Department of Mathematical Sciences Course Syllabus, Fall 2018