Fall 2019

MATH 651-001: Methods of Applied Mathematics I

Enkeleida Lushi

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
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	Instructo
Math 651-001	Professor Enkeleida Lushi

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

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

University-wide Withdrawal Date: The last day to withdraw with a **W** grade is Monday, November 11, 2019. 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	30%
Midterm Exam	30%
Final Exam	40%

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. 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: There will be NO MAKE-UP EXAMS during the semester. In the event the Final Exam is not taken, under rare circumstances where the student has a legitimate reason for missing the final exam, a makeup exam will be administered by the math department. In any case the student must notify the Math Department Office and the Instructor that the exam will be missed and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc., clearly stating the date AND time of the mitigating problem.

ADDITIONAL RESOURCES

Important Dates (See: Fall 2019 Academic Calendar, Registrar)

Date	Day	Event
September 3, 2019	T	First Day of Classes
September 13, 2019	F	Last day to add or drop a class
November 11, 2019	M	Last day to drop a class with a W grade
November 26, 2019	T	Thursday classes meet
Nov. 28 - Dec. 1, 2019	Th-Su	Thanksgiving Break
December 11, 2019	W	Last Day of Classes
December 12-13, 2019	Th-F	Reading Days
December 14-20, 2019	S - F	Final Exam Period

Course Outline

Week	Dates	Topic
1	9/3 & 9/5	Linear Ordinary Differential Equations: Theory (existence & uniqueness)
2	9/10 & 9/12	Linear ODEs: Methods for homogeneous ODEs
3	9/17 & 9/19	Linear ODEs: Methods for inhomogeneous ODEs
4	9/24 & 9/26	Local analysis of Linear ODEs (series solutions)
5	10/1 & 10/3	Sturm-Liouville Boundary Value Problems
6	10/8 & 10/10	Nonlinear ODEs
7	10/15 & 10/17	Linear Partial Differential Equations: Introduction and classification.
8	10/22 & 10/24	**MIDTERM (OCTOBER 22)**, Wave equation
9	10/29 & 10/31	Characteristics and quasilinear equations
10	11/5 & 11/7	Heat equation and separation of variables
11	11/12 & 11/14	Solution by eigenfunction expansion
12	11/19 & 11/21	Laplace's equation
13	11/26	Laplace's equation, Transform methods
14	12/3 & 12/5	Transform methods, cont.
15	12/10	Review and/or additional topics