



Differential Equations MATH 2320

Course Syllabus: Spring 2017

"Northeast Texas Community College exists to provide responsible, exemplary learning opportunities."

Dr. Mark R. Bouwens, Professor of Physics

B.S. Physics (Computer Science minor), Florida Institute of Technology
Health Physics - 14 weeks training - U.S. Nuclear Regulatory Commission
M.S. Applied Mathematics - Statistics, Florida Atlantic University
M.S. Physics, Florida Atlantic University
Ph.D. Physics, Florida Atlantic University

Office: Math Science Building, Room M

Phone: 903-434-8297

Email: mbouwens@ntcc.edu

	Monday	Tuesday	Wednesday	Thursday	Friday
Office Hours	7:30am-8am 12:30pm-1:30pm 4:30pm-5pm	7:30am-8am 12:30pm-3pm	7:30am-8am 12:30pm-1:30pm 4:30pm-5pm	7:30am-8am 12:30pm-3pm	

The information contained in this syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Catalog Course Description: 3 credit hours.

Lecture/Lab/Clinical: Three hours of lecture.

Prerequisite: Calculus II – MATH 2414.

Ordinary differential equations, including linear equations, systems of equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, and boundary value problems; application of differential equations to real-world problems.

Required Textbook: Tenenbaum and Pollard. *Ordinary Differential Equations*. Dover Publications, 1985.

Publisher: Dover Publications

ISBN Number: 978-0-486-64940-5

Required Textbook: *CRC Standard Mathematical Tables and Formulae* (any edition will do).

Publisher: CRC Press

ISBN Number: any

Core Curriculum Purpose and Objectives:

Through the core curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world; develop principles of personal and social responsibility for living in a diverse world; and advance intellectual and practical skills that are essential for all learning. Courses in the foundation area of mathematics focus on quantitative literacy in logic, patterns, and relationships. In addition, these courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.

Upon successful completion of this course, students should:

- 1) Identify homogeneous equations, homogeneous equations with constant coefficients, and exact and linear differential equations.
- 2) Solve ordinary differential equations and systems of equations using direct integration; separation of variables; reduction of order; methods of undetermined coefficients and variation of parameters; series solutions; operator methods for finding particular solutions; and Laplace transform methods.
- 3) Determine particular solutions to differential equations with given boundary conditions or initial conditions.
- 4) Analyze real-world problems in fields such as Biology, Chemistry, Economics, Engineering, and Physics, including problems related to population dynamics, mixtures, growth and decay, heating and cooling, electronic circuits, and Newtonian mechanics.

Lectures & Discussions:

Chapter 1: Basic Concepts

Chapter 2: Special Types of Differential Equations of the First Order

Chapter 3: Problems Leading to Differential Equations of the First Order

Chapter 4: Linear Differential Equations of Order Greater Than One

Chapter 5: Operators and Laplace Transforms

Chapter 6: Problems Leading to Linear Differential Equations of Order Two

Chapter 7: Systems of Differential Equations

Chapter 8: Problems Giving Rise to Systems of Equations

Chapter 9: Series Methods

Chapter 10: Numerical Methods

Tests/Exams (NOTE: Chapters will be divided by lesson for each test):

TEST 1: Chapters 1-2

TEST 2: Chapters 2-4

TEST 3: Chapters 4-6

TEST 4: Chapters 7,9,10

FINAL EXAM: Chapters 1-7,9,10

Assignments:

Homework will be assigned from Chapters 1-7,9,10.

Evaluation/Grading Policy:

Homework will represent 10% of your grade. There will be 4 Tests and a Final Exam. The average of the tests will represent 90% of your grade.

Other Course Requirements:

You will need a scientific calculator or graphing calculator for this class.

Course Restrictions:

You may not use electronic devices (with the exception of a calculator) in class or lab unless specifically provided permission from the instructor. Electronic devices include, but are not limited to, computers, tablets, phones, smartphones, and MP3 players.

NTCC Academic Honesty Statement:

"Students are expected to complete course work in an honest manner, using their intellects and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. NTCC upholds the highest standards of academic integrity. This course will follow the NTCC Academic Honesty policy stated in the Student Handbook."

Academic Ethics

The college expects all students to engage in academic pursuits in a manner that is beyond reproach. Students are expected to maintain complete honesty and integrity in their academic pursuit. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. Refer to the student handbook for more information on this subject.

ADA Statement:

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to arrange an appointment with a College counselor to obtain a Request for Accommodations form. For more information, please refer to the NTCC Catalog or Student Handbook

Family Educational Rights And Privacy Act (Ferpa):

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.