Hudson County Community College
Science, Technology, Engineering, Mathematics (STEM)
Differential Equations (MAT 212) Credits: 4

Text: D. G. Zill, & M. R. Cullen *"Differential Equations and Boundary-Value Problems"* 9th Edition

Instructor: Prof.
Office:
Phone:
Email:
Office Hours:

Grading Policy: Three one hour and a half exams 80%
Four exams will be given and the lowest grade will be dropped.

There will be NO extra credit assignment/no **extra credit** /no make-up exam

Four WebAssign Homework 20%

Cell Phone Policy: Cell phones should be on manner mode while in class. You may **NOT** leave class to answer a phone unless it is an emergency. In That case notify me and then leave. You will earn a grade of ZERO if you leave the class to answer a non-emergency call

Course Objectives: Upon completion of this course you should be able to:

- Classify differential equations by type, by order, and by linearity.
- Differential between initial value and boundary value problems
- Solve first order differential equations by
  - Separation of variables
  - Integrating factor
  - Exact equation technique
- Solve higher order equations by:
  - Reduction of order
  - Homogeneous linear equations with constant coefficients
  - Methods of undetermined coefficient & variation of parameters
  - Cauchy-Euler equation
  - Series solution
  - Method of Frobenius

- Identify Bessel functions and solve Bessel Equations of first and second kind
- Define Laplace Transform
- Obtain transform and inverse of a transform for simple functions
- Apply Translation theorems related to Laplace Transform

Disability Support Services
Students with disabilities who believe that they might need accommodations in this class are encouraged to schedule an appointment with Disabilities Support Services at (201) 360-4157, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a Physician, Licensed Learning Disabilities Teacher Consultant (LDTC), Psychiatrist, Psychologist, Psychiatric Nurse, Licensed Social Worker or Licensed Professional Counselor, who is qualified to assess the disability that the student claims to have and make recommendations on accommodations for the student. All information provided to the Disability Support Services Program will be confidential between the program, professors involved with the student, and individual student.

Academic Integrity: Academic integrity is central to pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students earn college credits by their honest efforts. When they are awarded a certificate or degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value.

Violations of the principals of academic integrity include:

- Cheating on exams
- Reporting false research data or experimental results
- Allowing other students to copy one's work to submit to instructors
- Communicating the contents of an exam to other students who will be taking the same test
- Submitting the same project in more than one course, without discussing this first with instructor
- Submitting *plagiarized* work. *Plagiarism* is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, the Internet, or another student's work

The College has set policies with regards to violations of Academic Integrity. If you would like to have a copy of these policies please let me know.

Differential Equations (MAT 212)

Date	Topic
Week 1	Introduction Chapter 1, Definitions & Terminology (classifications) Chapter 1 continued. Chapter 2, First-order differential equations (separable variables , and linear equations),
Week 2	Chapter 2 continued, exact equations, solutions by Substitutions Review and question/answer time Chapter 3, applications
Week 3	***Exam I, chapters 1, & 2 6:30-8:00 pm*** Exam starts 30 minutes late to allow for late arrivals. No extra time will be given if you arrive late. **Use of phone during the test will be considered as cheating -** **WebAssign Homework 1 is due**
Week 4	Chapter 4, Higher order differential equations (fundamental set of Solutions, linear dependence & linear independence, Wronskian, homogeneous linear equations with constant coefficients, non-homogeneous equations, method of undetermined coefficients),
Week 5	Chapter 4 continued, method of variation of parameters Cauchy-Euler equation
Week 6	Review and question/answer. Work on WebAssign homework 2
Week 7	***Exam II, chapters 2 & 3 6:30-8:00 pm*** Exam starts 30 minutes late to allow for late arrivals. No extra time will be given if you arrive later **Use of phone during the test will be considered as cheating -** **WebAssign homework 2 is due**
Week 8	Spring break- no class meeting
Week 9	Laplace Transform, inverse of a transform Review of grades **April 9, is the deadline to withdraw with a grade of W**

Week 10	Laplace Transform Continued unit step function, translation theorems Derivative of a transform, Dirac delta function
Week 11	Easter break- no class
Week 12	Exam III chapters 4, & 7***- 6:30-8:00 pm***
	Exam starts 30 minutes late to allow for late arrivals. No extra time will be given if you arrive later.
	Use of phone during the test will be considered as cheating -
	WebAssign Homework 3 is due
Week 13	Chapter 6, Series solutions of linear equations, ordinary and singular points, existence of a power series solution,
Week 14	**Review –** **WebAssign Homework 4 is due**
Week 15	**Exam IV, chapters 6, & 7 *6:30-8:00 pm***
	Exam starts 30 minutes late to allow for late arrivals. No extra time will be given if you arrive later
	Use of phone during the test will be considered as cheating -