# **Eastern** **IOWA COMMUNITY COLLEGE**

**Course Syllabus Information**

**MAT 227 Elementary Differential Equations with Laplace Transforms**

**Term: Spring 2016**

**I. Faculty Information:**

Instructor: **Mr. Douglas Corteville** Phone: 712-325-3403

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Office: Kinney Hall 034

Office Hours: MTWTF 2:00-3:30pm

**II. Course Information:**

Course Prefix/ No. Course Name Credits Lecture Lab

**MAT 227 Elementary Differential Equations**

**with Laplace Transforms 4 4 0**

Course Description:

Elementary Differential Equations and Laplace Transform covers elementary theory and applications of ordinary differential equations, matrices and solutions of linear equations, Eigenvalue methods for systems of linear differential equations Laplace transforms and series solutions.

Prerequisites:

*Pre-requisite:* Calculus II

Course Meeting Times Course Location

eCollege Web

Required Textbook

Elementary Differential Equations, 6th ed, by Edwards and Penney

ISBN-13: 978-0-13-239730-8

ISBN-10: 0-13-239730-7

Suggested Supplemental Textbooks, References

None

Materials and Supplies to be Furnished by Student

1. TI-85 series Graphing Calculator or TI-36 calculator.

Course Objectives

Upon completion of this course students will be able to:

1. Solve differential Equations

1. Solve differential equations using separation of variables.
2. Solve differential equations using substitution methods and exact equations.
3. Solve linear first-order differential equations.
4. Solve linear differential equations of higher order.
5. Solve non-homogeneous differential equations using the method of undetermined coefficients.

2. Use other methods to solve differential equations

1. Use Laplace transforms to solve differential equations
2. Solve differential equations using the power series method.
3. Solve differential equations at regular singular points using the Frobenius method.
4. Solve systems of differential equations
5. Using eigenvalues on homogenous systems
6. Second order systems
7. Multiple eigenvalues solutions of systems
8. For nonhomogenous linear systems
9. Solve differential equations using numerical methods.

Honor Code – Academic Honesty

Upon enrolling each student assumes an obligation to conduct her/his academic affairs in a manner compatible with the standards of academic honesty established by the College and its faculty. If this obligation is neglected or ignored by the student, disciplinary action will be taken.

Course Practices:

1. Attendance Requirements: Students are responsible for attending classes as scheduled. If an absence is unavoidable, the student is responsible for obtaining class notes from other students.
2. Standards for written work: Homework may be typed or legibly hand-written. If typed, submission by email is encouraged. Proper grammar and punctuation will be used.
3. Late papers and assignments: Late work will be accepted, but the instructor reserves the right to reduce the amount of credit awarded if circumstances warrant.
4. Missed exams: If a student misses a scheduled examination a make-up exam may be taken without penalty. The make-up exam will be comparable to, but different than the original exam.
5. Extra Credit: None
6. Participation: Participation: Is not be used to calculated your final grade.
7. Classroom Management and Behavior: Be on your best behavior and classroom management will take care of itself.

Instructional Techniques and Practices

Lecture and computer simulation

Classroom Assessment Techniques

The instructor will periodically obtain and evaluate informal feedback from students in order to evaluate learning and refine instruction.

Grading

1. Exams/Tests: there will be a total of four during the semester. The tests will be primarily general problem solving questions. Responses will be graded based on student understanding. The final exam will be cumulative. Exams will be open book with calculators allowed.
2. Homework: Will not be collected or graded.

GRADING POLICY:

Chapter test: 70% A 90%-100%

B 80%-89%

C 70%-79%

Final Exam: 30% D 60%-69%

100% F 0-59%

Diversity Statement

Iowa Western Community College values diversity and supports learning experiences that promote intellectual growth and human enrichment.

American with Disabilities Act Statement

If you are an individual with a disability who requires an accommodation to fully participate in academic programs or campus activities, please contact the Coordinator of Disability Services as soon as possible at 712-325-3390 or the Success Center, Clark Hall (CH214). This will allow time to plan your accommodations.

FERPA

Student rights concerning access to educational records are spelled out in Federal Public Law 98-380 as amended by Public Law 93-568 and in regulations published by the Department of Education. Student records and class schedules will be released only to students showing proper identification.

MAT 227 Course Outline and Schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DATE | DAY | WEEK | Reading assignment | Home work |
| 1/11/16 |  | 1 | 1.1 | Do odd-odd starting with #1 |
|  |  |  | 1.2 | Do odd-odd starting with #1 |
|  |  |  | 1.4 | 1-37 odd |
| 1/18/16 |  | 2 | 1.5 | 1-27 odd  31-39 odd |
|  |  |  | 1.6 | 1-49 odd |
|  |  |  | 1.7 | 1-19 odd |
| 1/25/16 |  | 3 | 1.8 | 1-9 odd |
|  |  |  | Chapter 1 test |  |
|  |  |  | 2.1 | 1-49 odd-odd |
| 2/1/16 |  | 4 | 2.2 | 1-25 odd-odd |
|  |  |  | 2.3 | 1-49 odd-odd |
|  |  |  | 2.5 | 1-49 odd-odd |
| 2/8/16 |  | 5 | 2.7 | 1-9 odd |
|  |  |  | 2.8 | 1-5 odd |
|  |  |  | Chapter 2 test |  |
| 2/15/16 |  | 6 | 3.1 | 1-21 odd-odd |
|  |  |  | 3.2 | 1-19 odd-odd |
|  |  |  | 3.3 | 1-33 odd-odd |
| 2/22/16 |  | 7 | 3.4 | 1-7 odd |
|  |  |  | Chapter 3 test |  |
|  |  |  | 4.1 | 1-33 odd-odd |
| 2/29/16 |  | 8 | 4.2 | 1-23 odd |
|  |  |  | 4.3 | 27-39 odd |
|  |  |  |  |  |
| 3/7/16 |  | 9 | 4.4 | 1-34 odd-odd |
|  |  |  | 4.5 | 1-22 odd-odd, 32, 34, 37, 39 |
|  |  |  |  |  |
| 3/14/16 |  | 10 | 4.6 | 1-12 odd |
|  |  |  | Chapter 4 Test |  |
|  |  |  | 5.1 | 11-19 odd |
| 3/28/16 |  | 11 | 5.2 | 1-27 odd-odd |
|  |  |  | 5.4 | 1-21 odd-odd |
|  |  |  |  |  |
| 4/4/16 |  | 12 | 5.5 | 1-7 odd |
|  |  |  | 5.6 | 1-13 odd-odd |
|  |  |  | 5.7 | 1-9 odd |
| 4/11/16 |  | 13 |  |  |
|  |  |  | Chapter 5 test |  |
|  |  |  |  |  |
| 4/18/16 |  | 14 | 6.1 | 1-9 odd |
|  |  |  | 6.2 | 1-9 odd |
|  |  |  |  |  |
| 4/25/16 |  | 15 | 6.3 | 1-9 odd |
|  |  |  | Review |  |
|  |  |  |  |  |
| 5/2/16 |  | 16 | Finals week | Final Exams |