A. COURSE INFORMATION

Course number/section: MATH 5336-001
Class meeting time: TR 9:30 – 10:45 AM
Class location: BH 205
Course Website: www.bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Dr. Mufid Abudiab
Office location: CI-306
Office hours: TR 10:45AM – 12:30 PM & 3:15 – 4:00 PM
Telephone: 361-825-6019
E-mail: mufid.abudiab@tamucc.edu
Appointments: To schedule an appointment, please email me in advance.

C. COURSE DESCRIPTION

This course provides a comprehensive introduction to the theory of differential equations with a focus on mechanics and dynamical systems. The analytical, qualitative, and quantitative treatment of concepts in linear and non-linear differential equations and its applications will be of interest to students in mathematics, physics, engineering, other sciences, and working professionals in any of these fields. Topics to be covered are systems of linear 1st order DE’s, plane autonomous systems, existence and uniqueness, stability theory, orthogonal functions and Fourier series, boundary-value problems in rectangular coordinate systems (PDE’s) and integral transform method. This course is enhanced by the computational and graphical capabilities of MATLAB or other software.

D. PREREQUISITES AND COREQUISITES

Math 3311 (Linear Algebra) and Math 3315 (Differential Equations) or instructor’s consent

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES


Optional Textbook(s) or Other References
1) Differential equations and Dynamical Systems by Lawrence Perko

2) Ordinary Differential Equations and Dynamical Systems (Graduate Studies in Mathematics) Hardcover – August 30, 2012 by Gerald Teschl (Author)
http://www4.ncsu.edu/~schecter/ma_732_sp13/teschl_ode.pdf


Note: Students need to consult the Blackboard class page by logging into bb9.tamucc.edu regularly.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

By the end of this course, students should be able to:

1. Master the standard theorems on the existence, uniqueness, and continuity properties of solutions that apply to a wide class of ordinary differential equations.
2. Understand and apply the theory of linear systems of first order ordinary differential equations, and the methods and qualitative properties of their solutions.
3. Know the stability properties of linear, almost linear, and nonlinear systems and how to identify these properties.
4. Understand the notation and language of ordinary differential equations and be able to apply the theory discussed to applied problems.
5. Do more advanced reading on their own about differential equations in general and its applications.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

- Instructional PPT presentations of new material and concepts,
- Class discussion and problem solving analysis using critical thinking techniques,
- Individual written assignments to enhance understanding of new concepts,
- Discovery method techniques supported by Technology (e.g. Matlab, …).
- Work on papers/posters and present at local math seminar or conferences.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Final course standing will be based upon class activities:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two Semester Exams</td>
<td>40</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20</td>
</tr>
</tbody>
</table>
Homework, Quizzes, and Class Activities | 20
---|---
Projects/Papers/Posters | 20

Final grades will be assigned as follows

<table>
<thead>
<tr>
<th>Weighted average in %</th>
<th>LETTER GRADE</th>
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<tbody>
<tr>
<td>90 - 100</td>
<td>A</td>
</tr>
<tr>
<td>80 – 89.99</td>
<td>B</td>
</tr>
<tr>
<td>70 -79.99</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69.99</td>
<td>D</td>
</tr>
<tr>
<td>Below 60</td>
<td>F</td>
</tr>
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</table>

I. COURSE CONTENT/SCHEDULE

- Complete course schedule will be posted on class blackboard page and announced on first day of class.

**Important Dates**

<table>
<thead>
<tr>
<th>DATE (BY DAY OR WEEK)</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, March 3rd</td>
<td>Exam 1</td>
<td>Chapters 1-4</td>
<td>See BB</td>
</tr>
<tr>
<td>March 16 - 22</td>
<td>SPRING BREAK – NO CLASS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday, April 30th</td>
<td>Exam 2</td>
<td>Chapters 7-10</td>
<td>See BB</td>
</tr>
<tr>
<td>Friday, April 10th</td>
<td>Deadline for Dropping a Course with a Grade of W</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday May 7th, 2015 8–10:30 AM</td>
<td>Final Exam</td>
<td>Comprehensive exam (covers all materials)</td>
<td></td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown on course schedule are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness

Attendance will be taken each class. Talking during class time and tardiness are often disruptive to the whole class and are not appreciated. If you are delayed and arrive late please do so quietly. Excessive tardiness, disruptive talking, disruptive behavior or performing
activities not related to the class will be counted as absences and may cancel bonus points at the end of the semester that usually is helpful to determine borderline grades. The instructor is NOT responsible for informing absent students what was covered in previous classes, homework or any other announcements.

**Late Work and Make-up Exams**
Late work will result a 20% deduction for every day it is late. Absolutely no exceptions!!

**Extra Credit**
If an extra credit work is assigned, or extra points are given, the total score should not exceed 100%. No points will be “saved” toward the next examination.

**Cell Phone Use**
Cell phone use is prohibited in any circumstances. Use of cell phone in class will be counted as absences and may cancel bonus points at the end of the semester.

**Laptop Use**
Students are welcome to use their laptops in class only if it is intended for learning purposes like log in to the class blackboard page, or other educational sites.

**Missed Exam**
There will be no makeup for a missed semester test unless for special circumstances.

**Participation**
Students are encouraged to participate in class discussions and problem solving skills.

**Others**
- Students are expected to read the textbook, other resources, and work assignments before the due dates.
- Homework is assigned regularly and due as specified. Late homework will result in a 20% deduction.
- Two semester tests will be administered during class times. The dates will be announced in class and posted on Blackboard. These dates may be changed with due notice announced during class time.
- Students are expected to read, understand, use professional papers for producing their own work that can be presented at local seminars or conferences.
- The final exam will be a comprehensive examination over all materials covered during the semester. Absolutely no early final examination, so make travel arrangements accordingly.

**K. COLLEGE AND UNIVERSITY POLICIES**
- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals
who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior. See Full University Policy at
http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

- Classroom/Professional Behavior
Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- Deadline for Dropping a Course with a Grade of W (University)
The grade of W will be assigned to any student officially dropping a course by Friday, April 10th, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must be submitted. After April 10, 2015 a student will not be allowed to drop a course.

- Grade Appeals (College of Science and Engineering)
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- Disability Services
Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of
disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/

L. OTHER INFORMATION

Help: Students are allowed to work with each other and seek help from other resources but they should produce their own work. I will be happy to work with you anytime during my office hours and also email me for your special needs. Good luck to everyone in the class.

GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.