Differential Equations

Course Description
Standard types of ordinary differential equations are studied in this course. First, second, and higher order equations are examined. Students will be entertained with Laplace transforms, power series method, and the basic theory of existence/ uniqueness. Applications to geometry, biological sciences, and physical sciences are included. This course is enhanced by the computational and graphical capabilities of MATLAB or other software.

Learning Objectives
After completion the course, students should be able to
1. Identify and classify differential equations (DE).
2. Solve first-order ordinary differential equations (ODE).
3. Solve first-order ODE applications.
4. Solve higher-order ODE, including applications.
5. Find power series solutions to ODE.
7. Approximate a solution to ODE using numerical methods.

Major Course Requirements
Successful completion of MATH 2414 (Calculus II) or Instructor’s Consent are pre-requisites for this course. The following assessments will be given during the semester: Quizzes, Homework, and Class Participation (20%), Labs and Journals (20%), Chapter Tests (40%), and Final Exam (20%).

Required or Recommended Readings
The free E-text “Notes on Diffy Qs: Differential Equations for Engineers by Jiří Lebl (http://www.jirka.org/diffyqs/diffyqs.pdf) and some supplements provided by the instructor will be used for this course. Students need to consult the class webpage: http://falcon.tamucc.edu/~mabudiab/Summer2012/math1324/index.htm regularly

Course Policies
- Course grade will be based upon the percentage of the total possible points that a student earns and the following grading scale: A: >90% of total points, B: >80% of total points, C: >70% of total points, D: >60% of total points.
- The class webpage will include a list of topics that will be studied during each class meeting and supplements as needed. The e-text contains exercises which should be worked out while studying the material.
- Attendance is mandatory. Attendance will be checked each class period.
- I am available during regular office hours or through special arrangement.
- Each student is expected to take notes during lectures, and keep a record of his/her assignments, tests and over all grades.
- This syllabus is subject to change at the discretion of the instructor. Material included is meant to provide an outline of the course and rules that the instructor will adhere to in
evaluating the student’s progress. However, this syllabus is not intended to be a legal contract. Questions regarding the syllabus are welcome any time.

- Attendance is required except in sickness and emergency situations.
- I do expect that you come to each class ready to learn and to participate. You are expected to devote for each hour of class 2-3 hours outside the class.
- Homework will be assigned every meeting to promote adequate student learning.
- The lab component of this class will take the form of computer projects that contain additional and extended problem material designed to engage students in the exploration and application of subject matter using computational technology.
- Make up work is not possible except in sickness and emergency situations.
- If at any point in the semester you are considering to drop the class, talk to me before you do it. I am here to help you in your learning experience and to help you succeed in your college career.
- Last day of class is July 6th, 2012.

Academic Integrity/Plagiarism.
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in failing the course.

Dropping a Class
I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. (June 22nd, 2012) is the last day to drop a class with an automatic grade of “W” this term.

Preferred methods of scholarly citations
Classroom/professional behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

Grade Appeals
As stated in University Rule 13.02.99.C2, Student Grade Appeals, 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 Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

Disabilities Accommodations
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101. If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

VII. Tentative course schedule

<table>
<thead>
<tr>
<th>Week of</th>
<th>Material</th>
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<tbody>
<tr>
<td>June 4th</td>
<td>Introduction and First Order ODEs-part 1</td>
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<tr>
<td>June 11th</td>
<td>First Order ODEs-part 2 and its Applications</td>
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<tr>
<td>18th</td>
<td>Exam 1, Higher Order Linear ODEs, and its Applications</td>
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<td>25th</td>
<td>The Laplace Transform</td>
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<tr>
<td>July 2nd</td>
<td>Exam 2, Power Series, Numerical Solutions, and Final Exam</td>
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