MATH-2413 (Calculus I)
Department of Mathematics and Statistics
Fall 2015

A. COURSE INFORMATION
Course number/section: MATH-2413-007
Class meeting time: TR 3:30 – 4:45 PM
Class location: IH 158
Course Website: www.bb9.tamucc.edu

B. INSTRUCTOR INFORMATION
Instructor: Dr. Mufid Abudiab
Office location: CI-306
Office hours: TR 9:30–11:30 AM or F 11AM-12PM or by appointment
Telephone: 361-825-6019
E-mail: mufid.abudiab@tamucc.edu

C. COURSE DESCRIPTION
This 4-credit course focuses on single-variable differential calculus. Emphasis is on technical skills, conceptual foundations, and applications of differentiation.

Math 2413 (Catalog Description): Limits, continuity, derivatives, applications of the derivative, and an introduction to integrals. Contains a laboratory component. Counts as the mathematics component of the University Core Curriculum. Prerequisite: MATH 1314 and 1316, or MATH 2312, or placement beyond MATH 2312.

D. PREREQUISITES AND COREQUISITES
Successful completion of MATH 1314 (College Algebra) and 1316 (Trigonometry), or MATH 2312 (Pre-Calculus), or placement beyond MATH 2310) are prerequisites for this course.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
Text: Calculus: Early Transcendentals, 8th Ed., by Stewart is the required text.
Web Assign access (with new textbook or purchased separately) will be used for homework and quizzes. Students need to consult the class web BB page bb9.tamucc.edu regularly.

Supplies:
A calculator is required for every quiz and examination. A TI-83/84 calculator or similar is recommended but not required (it may make this class more manageable).

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with
students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this core curriculum class, the student should:

1. Understand the scientific method and your place in the scientific community.
2. Be able to collaborate effectively as both an effective leader and follower.
3. Be able to apply mathematical concepts to new situations.
4. Communicate mathematics in interdisciplinary topics verbally and in writing.
5. Use mathematics to analyze data and translate data into visual representations.
6. Take personal responsibility and become a self-directed college learner.
7. Use technology effectively.

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By the end of the course, a student will be able to

1. Calculate and determine the existence of limits using the definition of limit, basic properties, and l'Hospital's Rule. Use calculations of limits to determine local and end behavior of functions.
2. Calculate derivatives of functions from the definition, by applying appropriate rules, and by using implicit and logarithmic differentiation.
3. Interpret derivatives as slopes of tangent lines and instantaneous rates of change. Relate units of a derivative to the units of the dependent and independent variable.
4. Apply derivatives of functions appropriately to: create linearization and differentials of functions; determine and apply related rates of change to solve problems; solve optimization problems; and determine geometric features of graphs of functions.
5. Determine if functions meet hypotheses of theorems and draw appropriate conclusions. Give examples and counterexamples.
6. Use Riemann sums to approximate areas and to estimate accumulations of rates.
7. Use anti-derivatives, the Fundamental Theorem of Calculus, and appropriate u du substitutions to evaluate integrals. Then interpret the results of integration as either a signed area under a curve, or as a function.
8. Recognize and determine the relationships between the graphs of a function, its derivatives and its integral.

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 (during lab time).
- Discovery method techniques supported by a graphing utility (e.g. to view the effects of shifting and translation concepts on a given function),
• Use of Web Assign which includes electronic copy of the book, videos, examples, other resources, and study hints.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Final course standing will be based upon several homework, quizzes, three semester tests, several labs and a final test.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Semester Exams</td>
<td>45</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15</td>
</tr>
<tr>
<td>Homework</td>
<td>10</td>
</tr>
<tr>
<td>Lab</td>
<td>10</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20</td>
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</tbody>
</table>

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>
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<tr>
<td>Bellow 60</td>
<td>F</td>
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I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Thursday</th>
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<tbody>
<tr>
<td>Week 1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug. 26th</td>
<td>No Class</td>
<td>Introduction to the Course, Diagnostic Tests, and Quick Review of chapter 1</td>
</tr>
<tr>
<td>Week 2:</td>
<td>2.1: The Tangent and Velocity Problems</td>
<td>2.2: The Limit of a Function</td>
</tr>
<tr>
<td>Sept. 1st &amp; 3rd</td>
<td></td>
<td><strong>HW #1: 2.1-2.2</strong></td>
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<tr>
<td>Week 3:</td>
<td>2.3: Calculating the Limits Using the Limit</td>
<td>2.4: The Precise Definition of a Limit</td>
</tr>
<tr>
<td>Sept. 8th &amp; 10th</td>
<td>Laws</td>
<td>2.5: Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>HW#2: 2.3 - 2.5</strong></td>
</tr>
<tr>
<td>Week 4:</td>
<td>Quiz #1</td>
<td>2.7: Derivatives and Rates of Change</td>
</tr>
<tr>
<td>Sept. 15th &amp; 17th</td>
<td>2.6: The Limit at Infinity and horizontal</td>
<td><strong>HW#3: 2.6-2.7</strong></td>
</tr>
<tr>
<td>Week</td>
<td>Dates</td>
<td>Topic</td>
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<tr>
<td>------</td>
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</tr>
<tr>
<td>5</td>
<td>Sept. 22(^{nd}) &amp; 24(^{th})</td>
<td>Asymptotes</td>
</tr>
<tr>
<td>6</td>
<td>Sept. 29(^{th}) &amp; Oct. 1</td>
<td>Test 1 (chapter 1 and 2)</td>
</tr>
<tr>
<td>7</td>
<td>Oct 6(^{th}) &amp; 8(^{th})</td>
<td>Quiz #2</td>
</tr>
<tr>
<td>8</td>
<td>Oct. 13(^{th}) &amp; 15(^{th})</td>
<td>3.5: Implicit Differentiation</td>
</tr>
<tr>
<td>9</td>
<td>Oct. 20(^{th}) – 22(^{nd})</td>
<td>Quiz #3</td>
</tr>
<tr>
<td>10</td>
<td>Oct. 27(^{th}) &amp; 29(^{th})</td>
<td>Test 2 (Chapter 3)</td>
</tr>
<tr>
<td>11</td>
<td>Nov. 3(^{rd}) &amp; 5(^{th})</td>
<td>4.3: Derivative Effect on graph Shape 4.4: Indeterminate Forms &amp; L’Hopital Rule</td>
</tr>
<tr>
<td>12</td>
<td>Nov. 10(^{th}) &amp; 12(^{th})</td>
<td>Quiz #4</td>
</tr>
<tr>
<td>13</td>
<td>Nov. 17(^{th}) &amp; 19(^{th})</td>
<td>4.8: Newton’s method 4.9: Antiderivatives</td>
</tr>
<tr>
<td>14</td>
<td>Nov. 24(^{th}) &amp; 26(^{th})</td>
<td>5.3: Fundamental Theorem of Calculus</td>
</tr>
<tr>
<td>15</td>
<td>Dec. 1(^{st})</td>
<td>Test #3 (Chapter 4 and 5)</td>
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</table>

Week 15: General Exam Review
**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, Sept. 29th</td>
<td>Exam 1</td>
<td>1 and 2</td>
<td>See Web Assign</td>
</tr>
<tr>
<td>Tuesday, Oct. 27th</td>
<td>Exam 2</td>
<td>3</td>
<td>See Web Assign</td>
</tr>
<tr>
<td>Tuesday, Nov. 24th</td>
<td>Exam 3</td>
<td>4 and 5</td>
<td>See Web Assign</td>
</tr>
<tr>
<td>Friday, Nov. 6th</td>
<td></td>
<td></td>
<td>Deadline for Dropping a Course with a Grade of W</td>
</tr>
<tr>
<td>Thursday, Nov. 26th</td>
<td></td>
<td></td>
<td>Thanksgiving Break</td>
</tr>
<tr>
<td>Thursday Dec. 8th, 2015</td>
<td>1:45-4:15PM</td>
<td></td>
<td>Comprehensive exam (covers all materials)</td>
</tr>
</tbody>
</table>

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 except for educational purposes.
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 Web Assign website.

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 PowerPoints materials in Blackboard, view videos and other multimedia available in Web Assign, and work assignments before the due dates.
- Homework is assigned online regularly through Web Assign that can be accessed at tamucc.webassign.com (you need to buy an access code) and due as specified. Late homework will result in a 20% deduction for every question not done on time. If you have problems to access the system you need to let me know as soon as possible.
- There is an online quiz immediately after a couple of HWs were done.
- Three 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. Bring your own calculators and it cannot be shared. Cell phones cannot be used as calculators.
- 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)**
  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 a failing grade. 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, 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
• **Statement of Civility**
  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. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day 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](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](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**
  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 (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.
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.

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**L. OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

- **Help:** CASA has many quality tutors to help you while you need someone beside my office hours. Welcome to visit those tutors at the Glasscock Student Success Center. Please find out their schedule first before you make a plan to go for this semester. 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.