MATH 2413 Calculus I
Department of Mathematics and Statistics
Fall 2018

A. COURSE INFORMATION

Course number/section: CRN 72356, MATH 2413.010
Class meeting time: Tuesday & Thursday 8:00am-9:15am
Class location: IH-158
Course Website: TAMU-CC Blackboard https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Valentina Postelnicu
Office location: CI-357
Office hours: Tuesday 9:30am-11:30am
            Wednesday 6:00pm-7:00pm online via WebEx
            Thursday 9:30am-11:30am, and by appointment
E-mail: Valentina.Postelnicu@tamucc.edu
Appointments: Please email me, and include information about your availability during the week you would like to meet with me.

C. COURSE DESCRIPTION

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.

D. PREREQUISITES/COREQUISITES

Prerequisites: Math 1314 (College Algebra) and Math 1316 (Trigonometry), or Math 2312 (Pre-calculus), or placement beyond Math 2312.
Corequisites: Enrollment in lab MATH 2413.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Textbook
Optional Textbooks or Other References
None.

Supplies
For exams, a scientific calculator with no symbolic capabilities is required. For homework and some class activities, it is useful to have a graphic calculator TI 83, TI 84 or TI 84 Plus. Also required is regular access to high speed internet and Microsoft Office applications (e.g., Word, Power Point).

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 course, students should 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

The course will be a combination of lectures, whole-class discussions, and individual investigations. Students will be required to give individual or group presentations. If needed, there will be alternative assignments in lieu of presentations. All participants are expected to engage in group and whole class activities by contributing knowledge and thoughtful evaluation of others’ contributions.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Grades will be based on the percentage of total points the student earns. During the semester, for an approximation of your overall grade you may look in Blackboard/My Grades, the column Weighted Total. The exact overall grade will be known only at the end of the semester, when all the categories that compose the overall grade will be known. At the end of the semester, the final overall grade will be posted in the column Weighted Total. There will be points given on the following:

<table>
<thead>
<tr>
<th>ACTIVITY/ASSIGNMENT</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Homework (WebAssign, BB/Discussion Forum)</td>
<td>20%</td>
</tr>
<tr>
<td>Lab &amp; Class Participation</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>15%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam (comprehensive)</td>
<td>30%</td>
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The Online Homework (Blackboard link in Help & Resources/Tools/Access WebAssign), Quizzes and Exams will be graded based on the number of correct answers. Quizzes will be unannounced, and contain 1-2 problems from the current topics. There will be 7-8 quizzes, two of them with the lowest grades will be dropped. Specific directions for course activities/assignments (e.g., content, format, submission, deadlines, feedback) will be announced in class and/or posted on TAMUCC-Blackboard, at https://bb9.tamucc.edu/. The lab will be graded by your TAs (Teaching Assistants), based on your lab reports. Class participation will be graded based on attendance and your answers during class activities. For essay-type of questions or presentations, the following rubric will be used for grading:

<table>
<thead>
<tr>
<th>Category</th>
<th>4 Exemplary</th>
<th>3 Good</th>
<th>2 Satisfactory</th>
<th>1 Unsatisfactory</th>
</tr>
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<tbody>
<tr>
<td><strong>Subject knowledge 50%</strong></td>
<td>Demonstrates subject knowledge throughout the entire assignment. All information is clear,</td>
<td>Demonstrates subject knowledge most of the time. Some information is clear,</td>
<td>Demonstrates some subject knowledge. Some information is confusing,</td>
<td>Subject knowledge is not demonstrated. Information is confusing,</td>
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</table>


clear, appropriate, and accurate. The solutions to all problems are correct.

applicable, and accurate. Most of the solutions to problems are correct, some solutions have minor errors.

appropriate, and accurate. Some solutions to problems are correct.

insufficient, inappropriate, and inaccurate. Most of the problems have incorrect solutions.

The sequence of information/proof is logical and well organized.

The sequence of information/proof is well organized.

Some parts of the sequence of information/proof is organized.

The sequence of information/proof is disorganized.

Excellent written communication of ideas/ excellent integration of spoken and visual presentation.

Good written communication of ideas, most of the time/good integration of spoken and visual presentation, most of the time.

Some parts are well written, and ideas are communicated effectively / some parts of the presentation are coordinated orally and visually.

The written paper is hard to follow, ideas are not communicated effectively / the presentation is hard to follow, the spoken and visual presentation are not integrated.

<table>
<thead>
<tr>
<th>Organization 30%</th>
<th>Communication (written and/or oral presentation) 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>The sequence of information/proof is logical and well organized.</td>
<td>Excellent written communication of ideas/ excellent integration of spoken and visual presentation.</td>
</tr>
<tr>
<td>The sequence of information/proof is well organized.</td>
<td>Good written communication of ideas, most of the time/good integration of spoken and visual presentation, most of the time.</td>
</tr>
<tr>
<td>Some parts of the sequence of information/proof is organized.</td>
<td>Some parts are well written, and ideas are communicated effectively / some parts of the presentation are coordinated orally and visually.</td>
</tr>
<tr>
<td>The sequence of information/proof is disorganized.</td>
<td>The written paper is hard to follow, ideas are not communicated effectively / the presentation is hard to follow, the spoken and visual presentation are not integrated.</td>
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</table>

Final grades will be assigned according to the following table:

**Percentage Grade**

- ≥90.0% A
- ≥80.0% B
- ≥70.0% C
- ≥60.0% D
- Below 60% F

**I. COURSE CONTENT/SCHEDULE**

<table>
<thead>
<tr>
<th>DATE</th>
<th>Topics</th>
<th>Chapters/Sections</th>
<th>ASSIGNMENTS</th>
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</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Introduction to Calculus</td>
<td>Review from Chapter 1</td>
<td>Online Homework 1 (WebAssign)</td>
</tr>
<tr>
<td>8/28, 8/30</td>
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<tr>
<td>Week 2</td>
<td>Limits</td>
<td>2.1-2.3</td>
<td>Online Homework 2 (WebAssign)</td>
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<tr>
<td>9/4, 9/6</td>
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<tr>
<td>Week 3</td>
<td>Continuity, Limits at Infinity, Asymptotes</td>
<td>2.4-2.6</td>
<td>Online Homework 3 (WebAssign)</td>
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<tr>
<td>9/11, 9/13</td>
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<tr>
<td>Week 4</td>
<td>Derivatives</td>
<td>2.7-2.8</td>
<td>Online Homework 4 (WebAssign)</td>
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<tr>
<td>9/18, 9/20</td>
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<tr>
<td>Week 5</td>
<td>Differentiation Rules</td>
<td>3.1-3.3</td>
<td>Online Homework 5 (WebAssign)</td>
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<td>9/25, 9/27</td>
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<tr>
<td>Week 6</td>
<td>Chain Rule, Implicit Differentiation, Differentiating Exponential and Logarithmic</td>
<td>3.4-3.7</td>
<td>Online Homework 6 (WebAssign)</td>
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<tr>
<td>10/2, 10/4</td>
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<tr>
<td>Week 7 10/9, 10/11</td>
<td>Midterm Exam Related Rates</td>
<td>Midterm Exam 3.8</td>
<td>Midterm Exam Oct 9 (face-to-face) Online Homework 7 (WebAssign)</td>
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<tr>
<td>Week 8 10/16*, 10/18</td>
<td>Role of Derivatives 4.1-4.3</td>
<td>Online Homework 8 (WebAssign) Online presentation Related Rates problems (Blackboard/Discussion Forum)</td>
<td></td>
</tr>
<tr>
<td>Week 9 10/23, 10/25</td>
<td>L’Hospital Rule, Graphing Functions 4.4-4.6</td>
<td>Online Homework 9 (WebAssign)</td>
<td></td>
</tr>
<tr>
<td>Week 10 10/30, 11/1</td>
<td>Optimization, Newton’s Method, Antiderivatives 4.7-4.9</td>
<td>Online Homework 10 (WebAssign)</td>
<td></td>
</tr>
<tr>
<td>Week 11 11/6, 11/8</td>
<td>Areas, Definite Integral 5.1-5.2</td>
<td>Online Homework 11 (WebAssign)</td>
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<tr>
<td>Week 12 11/13, 11/15</td>
<td>Review Chapter 4 Chapter 4</td>
<td>Online Homework 12 (WebAssign) Optimization Problems</td>
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</tr>
<tr>
<td>Week 13 11/20, 11/22**</td>
<td>The Fundamental Theorem of Calculus Indefinite Integrals, Substitution Rule 5.3</td>
<td>Optimization Problems (ppt presentations Optimization Problems in class &amp; online)</td>
<td></td>
</tr>
<tr>
<td>Week 14 11/27, 11/29</td>
<td>Indefinite Integrals, Substitution Rule 5.4-5.5</td>
<td>Online Homework 13 (WebAssign)</td>
<td></td>
</tr>
<tr>
<td>Week 14 12/4</td>
<td>Final Review Chapters 1-5</td>
<td>Online Homework 14 (WebAssign)</td>
<td></td>
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<tr>
<td>Final Exam 12/7</td>
<td>Final Exam (comprehensive) Chapters 1-5</td>
<td>COMMON Final Exam Friday Dec 7th, 1:45pm-4:15pm</td>
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</tr>
</tbody>
</table>

* Online delivery and assignments, no face-to-face classes.

** Thanksgiving Day, no classes

Note: Changes in this course schedule may be necessary and will be announced to the class by the instructor. The assignments, quizzes and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. **COURSE POLICIES**

**Attendance/Tardiness**
You are expected to attend every class session, and arrive on time. There is no make up for class activities, you need to be present to participate. All the absences will be considered “unexcused” unless you have an exceptional situation (e.g., documented illness, family situation), and you email the instructor about it.

**Late Work and Make-up Exams**
Late assignments will not be accepted, unless exceptional circumstances prevent you from completing them. Extension of deadlines will be at the instructor’s discretion. Late assignments may result in partial or total loss of credit. There are **NO** make-ups for quizzes,
exams or in-class activities.

**Extra Credit**
There will be no extra credit for this course.

**Cell Phone Use**
Please silence phones before coming to class. If you need to take a call, please go outside the classroom.

**Laptop Use**
In general, you cannot use your laptops during class activities or exams. For special circumstances (e.g., presentations), or special needs, please talk with the instructor.

**Food in Class**
Refrain from bringing food to class. For special needs or occasions, please talk with the instructor.

**Missed Exam**
Exceptional circumstances (e.g., documented illness, family situations) may be considered at the instructor’s discretion.

**Participation**
You are expected to come to class prepared every time, and participate in class activities.

### 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.

- **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.
• 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)
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 your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. 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. Please consult the Academic 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, 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
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.

http://disabilityservices.tamucc.edu/

- **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.

**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.