Calculus 1  Math 2413.005  
Department of Mathematics and Statistics  
Spring 2020

A. **COURSE INFORMATION**

Course number/section: Math 2413.005  
Class meeting time: TH 12:30 – 1:45 pm  
Class location: OCNR 117  
Course Website: bb9.tamucc.edu

B. **INSTRUCTOR INFORMATION**

Instructor: Douglas Johnson  
Office location: CI-351  
Office hours: MWF 10-10:50 PM, TR 2-3:15 PM  
Telephone: (361) 825-2844  
e-mail: douglas.johnson@tamucc.edu  
Appointments: Via email

C. **COURSE DESCRIPTION**

**Catalog Course 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.

**Extended Course Description**
Registration for one section of the lab is required for this course. Lecture and lab together count as a four-hour course.

D. **PREREQUISITES AND COREQUISITES**

**Prerequisites**
Math 1314 (College Algebra) and Math 1316 (Trigonometry), or Math 2312 (Pre-calculus), or placement beyond Math 2312.

**Corequisites**
Registration for one lab for Math 2413

E. **REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES**

**Required Textbook(s)**
WebAssign access code is required for homework and can be purchased either in the university book store or online. I recommend checking both sources before buying.

**Optional Textbook(s) or Other References**
*Calculus: Early Transcendentals*, by Stewart, 8th Edition

(When you purchase the access code, it includes an electronic version of the textbook. So, it is
not required to buy the hardcopy unless you prefer to do so.\)

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**

Methods and activities for instruction include:

- Instructional presentation of new material and concepts,
- Individual online assignments via WebAssign to enhance understanding of new concepts,
H. MAJOR COURSE REQUIREMENTS AND GRADING

The student learning outcomes described in Section F will be measured via progress on homework, quizzes, tests and the final exam. Every problem in the homework can be worked multiple times until a correct answer is achieved. There is no reason not to obtain a 100 on every homework assignment. The final exam is comprehensive and is written by the Mathematics Department. All students will take a common final exam. I do expect you to remember all concepts that I teach as noted on this syllabus.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exam 1, 2 &amp; 3</td>
<td>40%</td>
</tr>
<tr>
<td>Homework/Quizes</td>
<td>15%</td>
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<tr>
<td>&amp; Participation</td>
<td></td>
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<tr>
<td>Labs</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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Common Final Exam TBA

Participation: My lectures are intended to be interactive. Please come to class ready to ask and answer question.


Quizes
Quizzes will be given throughout the semester. They will be averaged in with your homework grade.

Homework
There will be regular homework assignments given that you must do in order to truly understand the material. You are encouraged to work on these assignments daily as this is how you practice what we go over in class. All homework assignments will be done online using WebAssign. Office hours are a great opportunity to ask more questions about homework. On-campus free tutoring in CASA is another way of getting help with the homework.

Exams (40%)
There will be 3 exams during the semester, and the date of each will be announced at least one week advance. The lowest Exam grade will be dropped. The exams ARE NOT open note or book. Cheat-sheets will NOT be allowed during any exams. So, make sure to memorize all the formulas. Regardless of the reason, a grade of zero (0) will be recorded for any exam not taken, and there will be no make-ups on exams.

Labs (20%)
The lab part of the course is grade by the TA.

Final Exam (20%)
The departmental common final exam will be comprehensive and set for all students who are in Math2413 on the same day (Friday, May 4th, 2:00 pm ~ 4:30pm). There will be NO MAKEUP
for the final exam. PLAN AHEAD!!

If your final exam is higher than one of your lowest test grades or a missed one, then the final exam will replace that test grade. The final exam can **ONLY** replace **ONE TEST** grade.

I. COURSE CONTENT/SCHEDULE (Tentative)

<table>
<thead>
<tr>
<th>WEEK (DATE)</th>
<th>SECTIONS</th>
<th>TOPICS</th>
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</thead>
<tbody>
<tr>
<td>1 (1/16)</td>
<td>Syllabus Pre-Calculus Review</td>
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<tr>
<td></td>
<td>2.1</td>
<td>Tangent and Velocity</td>
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<td></td>
<td>2.2</td>
<td>Limit of a Function</td>
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<td></td>
<td>2.3</td>
<td>Limit Laws</td>
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<tr>
<td>2 (1/23)</td>
<td>2.5</td>
<td>Continuity</td>
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<td></td>
<td>2.6</td>
<td>Limits at Infinity</td>
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<td></td>
<td>2.7</td>
<td>Derivatives, Rates of Change</td>
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<tr>
<td>3 (1/30)</td>
<td>2.8</td>
<td>Derivatives as Functions</td>
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<tr>
<td></td>
<td>3.1</td>
<td>Polynomials, Exponentials</td>
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<tr>
<td>4 (2/6)</td>
<td>Review</td>
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<tr>
<td>5 (2/13)</td>
<td>Exam 1</td>
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<td></td>
<td>3.2</td>
<td>Product Rule</td>
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<tr>
<td>6 (2/20)</td>
<td>3.2</td>
<td>Quotient Rule</td>
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<td></td>
<td>3.3</td>
<td>Trig Functions</td>
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<td></td>
<td>3.4</td>
<td>Chain Rule</td>
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<td>7 (2/27)</td>
<td>3.5</td>
<td>Implicit Differentiation</td>
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<td></td>
<td>3.6</td>
<td>Log Functions</td>
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<td></td>
<td>3.7</td>
<td>Applications</td>
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<tr>
<td></td>
<td>3.9</td>
<td>Related Rates</td>
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<tr>
<td>8 (3/6)</td>
<td>3.10</td>
<td>Linear Approximations</td>
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<td></td>
<td>4.1</td>
<td>Max/Min Values</td>
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<td></td>
<td>4.2</td>
<td>Mean Value Theorem</td>
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<tr>
<td>9 (3/13)</td>
<td>Spring Break</td>
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<tr>
<td>10 (3/20)</td>
<td>Review and Exam 2</td>
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<tr>
<td>11 (3/27)</td>
<td>4.3</td>
<td>Shape of a Graph</td>
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<td></td>
<td>4.4</td>
<td>L'Hôpitals Rule</td>
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<td></td>
<td>4.5</td>
<td>Curve Sketching</td>
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<td>12 (4/3)</td>
<td>4.7</td>
<td>Optimization</td>
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<td></td>
<td>4.9</td>
<td>Adtiderivatives</td>
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<td>13 (4/10)</td>
<td>Review and Exam 3</td>
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<tr>
<td>14 (4/17)</td>
<td>5.1</td>
<td>Area and Distance</td>
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<td></td>
<td>5.2</td>
<td>Definite Integral</td>
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<td></td>
<td>5.3</td>
<td>Fundamental Theorem</td>
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<tr>
<td>15 (4/24)</td>
<td>5.4</td>
<td>Indefinite Integral</td>
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<td></td>
<td>5.5</td>
<td>u-substitution</td>
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<tr>
<td>16 (5/1)</td>
<td>Review</td>
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<tr>
<td>17 (5/4)</td>
<td>Final Exam Room: TBA</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 are directly related to the Student Learning Outcomes described in Section F.


J. COURSE POLICIES

Attendance/Tardiness
Attendance is mandatory by Texas A&M University. Everyday a new topic is covered, and any material that is missed could affect your progress. If you have to miss, please make sure that you get the notes from someone. Also, you are responsible for what is due that week when you are absent. Assignments are available 24 hours per day for the entire week it is due. There will be no excuses for missing assignments unless it is an absolute emergency with documentation.

Late arrival to exams
If you arrive at any exam after the first person has completed the exam and left the room, you will not be allowed to take the exam.

Missed Exam
Makeup exams will generally NOT be administered. The lowest exam grade will be dropped. An exception can be made only with written evidence of an official University excused absence. For an absence to be considered excused, the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident or emergency) the student must provide notification by the end of the second working day after the absence. In the case of illness or injury, students are required to obtain a confirmation note from a health care professional affirming date and time of a medical office visit regarding the illness or injury.

Make-up Quizzes
NO MAKEUPS will be given for quizzes. You will receive a zero for any missed quizzes.

Extra Credit
I do not offer extra credit.

Use of electronic devices in class/during exams
Other than a calculator, any use of an electronic device that could disrupt the class must be TURNED OFF or SILENCED. Also, NO SOUND or VIDEO recording may be used during lecture or lab without the instructor’s prior approval. These electronic devices include: cellphones, laptops, tablets, and WEB access devices, etc. Any use of such device during an exam will result in a ZERO on that exam.

Exam Procedures
During an exam all watches and cell phones must be stored out of sight and placed on silent/off. Any long sleeves must be rolled up to the elbows. All students will sit so that they are spaced out as much as possible. Be prepared to present a student ID at the beginning of the exam.

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/](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.

- **CASA**
The Center for Academic Student Achievement is your best free resource on campus. It
provides free academic support through tutoring, counseling, and helps you navigated
through higher education. The CASA website is: [http://casa.tamucc.edu/](http://casa.tamucc.edu/)
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.