Math 1810 Course Syllabus

Course Title:
Applied Calculus I

Course Description:
Three credits. This course satisfies the General Education Mathematics requirement and meets specific requirements for programs as outlined in the MTSU Undergraduate Catalog. Topics include mathematical modeling applied to real world problems, sets, functions, limits, continuity, single variable differentiation, implicit differentiation, exponential and logarithmic models.

Course Prerequisites:
Eligibility to take MATH 1710, two years of high school algebra, a Math Enhanced ACT score of at least 19 or COMPASS placement passing grade in MATH 1710.

Instructor Information:

Instructor:

Office:

E-mail/Phone:

Office Hours:

Webpage:

Attendance Policy:
Attendance is required at each class meeting. Participation in University sanctioned activities or in military duties and situations where the institution’s policy on inclement weather is applicable are considered excused absences. However, non-attendance does not relieve a student of the responsibility for work covered or assigned. The instructor will keep a record of attendance for each student.

Required Materials:

Calculator: A TI-83 or TI-84 Plus graphing calculator is required for this course. TI-89 or equivalent is not allowed.

WebAssign class key:
Course Purpose:
This course is designed to help students develop basic skills and concepts in applied calculus. It introduces the notion of the limit of a function and applies the idea to the definition of derivative and integral.

Learning Outcomes:
Upon completion of this course with a passing grade, the student will:

- have a clear understanding of functions.
- have the ability to calculate the derivative of a function utilizing its definition, formulas derived from the definition of the derivative, and previously known derivatives of component functions.
- have the ability to apply derivatives to the approximation of function values, to sketching (including increasing-decreasing behavior, optimization, concavity and inflection points) and to solving problems modeled by functions.
- have a clear understanding of the definite integral-its definition, calculation and application using antiderivatives and the Fundamental Theorem of Calculus.

General Education Mathematics Goal and Learning Outcomes:

Goal:
The goal of mathematics is to expand students’ understanding of mathematics beyond the entry-level requirements for college and to extend their knowledge of mathematics through relevant mathematical modeling with applications, problem solving, critical thinking skills, and the use of appropriate technologies.

Learning Outcomes:
Upon completion of this course, students will demonstrate the ability to:

- Use mathematics to solve problems and determine if the solutions are reasonable.
- Use mathematics to model real world behaviors and apply mathematical concepts to the solution of real-life problems.
- Make meaningful connections between mathematics and other disciplines.
- Use technology for mathematical reasoning and problem solving.
- Apply mathematical and/or basic statistical reasoning to analyze data and graphs.

Course Requirements:
In order to accomplish the learning outcomes of this course, the learner is required to:

- Attend class lectures
- Participate in class activities
- Read and study assignments
- Solve assigned problem sets
- Complete test, quizzes, homework, etc.
• Complete a comprehensive final exam

If you do not take the final exam, you cannot pass the course.

Course Topics:
This course consists of selected topics from Chapters 1, 2, 3, 4, and 5 in the required text, including preliminaries, functions, limits and the derivative, differentiation and applications of the derivative, optimization and integration.

Sections to Be Covered:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Sections Covered:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Preliminaries</td>
<td>1.1 – 1.9</td>
</tr>
<tr>
<td>2: Functions</td>
<td>2.1 – 2.7</td>
</tr>
<tr>
<td>3: Limits and Derivatives</td>
<td>3.1 – 3.4</td>
</tr>
<tr>
<td>4: Differentiation and Applications of the Derivative</td>
<td>4.1 – 4.5</td>
</tr>
<tr>
<td>5: Optimization and Integration</td>
<td></td>
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<tr>
<td></td>
<td>*Integration and the Fundamental Theorem – Optional</td>
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</table>

Course Evaluation and Grading:
1. Chapter 1 Preliminaries: Three Mastery Modules are provided as homework assignments 1.1-1.9 in WebAssign. Each module MUST be completed with at least 80% mastery. If you are unable to complete these preliminary modules with at least 80% mastery, then you are strongly encouraged to consider dropping the class. The dates for completion of the mastery modules are scheduled in WebAssign as follows:

<table>
<thead>
<tr>
<th>Mastery Module</th>
<th>Mastery Topics</th>
<th>Mastery Topics Covered in Sections</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Real numbers Multiplying polynomials</td>
<td>1.1 and 1.2</td>
<td></td>
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<tr>
<td>2</td>
<td>Factoring polynomials Rational expressions Integer exponents</td>
<td>1.3, 1.4, and 1.5</td>
<td></td>
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<tr>
<td>3</td>
<td>Solving linear equations Rational exponents and radicals</td>
<td>1.6, 1.7, 1.8, and 1.9</td>
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<td></td>
<td>Solving quadratic equations and inequalities by factoring</td>
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</table>

You may not move to successive homework for sections 1.1 – 1.9 until previous homework section is completed with at least 80%.

2. WebAssign homework average – 10%
3. WebAssign practice tests average – 10%
4. Attendance average – 10%
5. Test average – 50%
6. Comprehensive final exam score – 20%
Grading Scale:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90 – 100</td>
<td>A</td>
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<tr>
<td>80 – 89</td>
<td>B</td>
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<td>70 – 79</td>
<td>C</td>
</tr>
<tr>
<td>60 – 69</td>
<td>D</td>
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<tr>
<td>Below 60</td>
<td>F</td>
</tr>
</tbody>
</table>

Important Dates:
Last Day to drop without a grade:

Final Day to drop with a W:

Final Exam Time and Date:

<table>
<thead>
<tr>
<th>Test</th>
<th>Date</th>
<th>Chapter</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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Final Exam:
The final examination is a Mathematics Department, multiple-choice, comprehensive examination given to all students enrolled in MATH 1810. Students are required to have completed the final examination as per the scheduled date/time for their respective section: see Academic Calendar on MTSU Pipeline. The final examination is closed book and closed notes (except for 8.5” x 11” sheet allowed for notes). Examination pamphlets and scratch paper are provided by the exam proctor. Unexcused absences for the final examination result in a course grade of F.

Note: Students are responsible for and required to bring the following materials to the final examination: (1) a large scantron, Form No. 4521, (2) a TI 83 or 84 Plus graphing calculator, (3) a #2 pencil, and (4) an 8.5” x 11” sheet of paper containing student preferred information.

Note: The results of the final exam may be used by the university study as a part of the General Education assessment process. Please know that no names will appear in the study and the anonymity of all test scores is assured. Your participation in the study is voluntary, and your decision to participate or not will not affect your course grade or your standing with Middle Tennessee State University.

Judicial Statement / Academic Misconduct:
Academic misconduct is defined as plagiarism, cheating, fabrication, or facilitating any such act. For purposes of this section, the following definitions apply:
(1) Plagiarism. The adoption or reproduction of ideas, words, statements, images, or works of another person as one’s own without proper acknowledgment.

(2) Cheating. Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.

(3) Fabrication. Unauthorized falsification or invention of any information or citation in an academic exercise.

(4) Facilitation. Helping or attempting to help another to violate a provision of the institutional code of academic misconduct.

Academic misconduct will result in actions taken as defined by the MTSU code of Academic Integrity. A complete description of this code can be found at MTSU's webpage for Judicial Affairs and Mediation services. In addition to other possible disciplinary sanctions that may be imposed through regular institutional procedures as a result of academic misconduct, the instructor has the right to assign an F or a zero for the work in question, or to assign an F for the course. If a student believes he or she has been falsely accused of academic misconduct, and if his or her final grade has been lowered as a result, the student may appeal the case through the appropriate institutional procedures.

Drop/Withdrawal Policy and Dates:
Please note the Drop Policy and Withdrawal Procedures as they are stated in the Current Registration Guide. A grade of “I” will be given only in accordance with University Policy. No grade of “W” will be assigned after the official drop date except in situations involving extreme extenuating circumstances beyond the student’s control. In particular, a “W” will not be granted merely because the student is failing. Students should be aware that missing the official drop date and thereby receiving an “F” can have ramifications on financial aid.

General conduct in class:
The instructor has primary responsibility for control over all classroom behavior and can direct the temporary removal or exclusion from the classroom of any student engaged in disruptive conduct or conduct which otherwise violates the general rules and regulations of MTSU.

Make-Up Policy:
Make-ups will not be given for anything other than in-class exams, and only with the instructor’s prior consent (emergencies excepted). A University approved excuse must be provided in order to be given a make-up exam and, depending on circumstances, the instructor has the right to not give a make-up exam.

Lottery Scholarship Policy:
Do you have a lottery scholarship? To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility.
If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your Lottery Statement of Understanding form (http://www.mtsu.edu/financial-aid/forms/LOTFOD.pdf) or contact your MT One Stop Enrollment Counselor (http://www.mtsu.edu/one-stop/counselor.php).

**Free Tutoring:**
Math tutoring for this course is available as a free service to MTSU students in KOM 252. Tutoring is fundamental to your success as a student. At every level of your academic journey, you will discover that tutoring assists your understanding, recollection, and application of what was presented in the classroom.

Take advantage of our FREE tutoring service and learn how to study, get help with understanding difficult course material, receive better test grades, or simply improve your grade point average. Tutoring is available in *study skills and learning strategies* that includes sessions on time management, notetaking, when and where to study, and memory principles. Tutoring is also available in over 200 courses including biology, history, computer information systems, physics, math, psychology, chemistry, economics, recording industry, and many more. The central location for tutoring is the Tutoring Spot, located in Walker Library, but is also conducted at various other campus sites. For available tutoring opportunities, visit http://mtsu.edu/studentsuccess/tutoring.php. For questions, call the Tutoring Spot at 615-904-8014.

**Reasonable Accommodations for Students with Disabilities:**
Reasonable Accommodations for Students with Disabilities: Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the Disability & Access Center (DAC) website www.mtsu.edu/dac and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.