Professor: Dr. Brittney Falahola  
Office: 324 Mathematics Building  
Email: falaholabl@sfasu.edu  
Office Phone: 936.468.1722

Class Times & Place: 11:00 – 11:50 MWF, Room 357, Math Building
Lab Time & Place: 11:00 – 12:15 R, Room 358, Math Building

Office Hours: For the times in the table below, no appointment is needed (except in the case of learning target reassessments; see below); simply come by as your schedule allows. In addition, appointments may also be scheduled by emailing me in advance.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:30 – 3:30</td>
<td>9:00 – 10:30</td>
<td>2:30 – 3:30</td>
<td>9:00 – 10:30</td>
<td></td>
</tr>
</tbody>
</table>

Course description: Topics include limits, continuity, differentiation of algebraic, trigonometric, and other transcendental functions, and applications of differentiation, including optimization and curve sketching, antiderivatives, integration by substitution, definite integrals, the Fundamental Theorem of Calculus, and application of integration to areas of regions in the plane.

Core Objectives (CO):
1. Critical Thinking [CO 1]: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. Communication Skills [CO 2]: to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. Empirical and Quantitative Skills [CO 3]: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Text and Materials: The required textbook is Calculus (Early Transcendentals), 3rd edition, by Rogawski and Adams, ISBN 9781464114885. Topics for MTH 233 are included in chapters 2, 3, 4, and 5 of the text. For exams, students may use only a non-programmable, non-graphing calculator.

Exam Calendar: Please note that the dates for our in-class exams below are subject to change. The final is university scheduled and cannot be taken at a different time without permission of the Dean of the College of Sciences and Mathematics. Be sure to arrange your end-of-the-semester travel plans accordingly.

<table>
<thead>
<tr>
<th>Exam 1</th>
<th>Thursday, February 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 2</td>
<td>Thursday, March 14 &amp; Friday, March 15</td>
</tr>
<tr>
<td>Exam 3</td>
<td>Wednesday, April 24 &amp; Thursday, April 25</td>
</tr>
<tr>
<td>Exam 4</td>
<td>Wednesday, May 8 &amp; Thursday, May 9</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Wednesday, May 15, 10:30am – 12:30pm in Math Building Room 357</td>
</tr>
</tbody>
</table>

Course Requirements:
- **Four in-class exams**—[CO 1, 2, 3] If a student must miss an exam due to an excused absence, special arrangements should be made at least one week in advance (when possible). Cell phones and graphing calculators are not allowed out during exams, even if that is all you brought. Students are responsible for bringing their own scientific calculator to exams. No music (even through headphones) is allowed during exams.
- **Quizzes**—[CO 1, 2, 3] We will have weekly quizzes on Fridays, except on exam weeks. You will be told each Monday prior to a quiz which learning targets will be assessed on that quiz. Because there will be opportunities for reassessment of learning targets, there will be no (traditional) make-up quizzes.
- **Lab assignments**—[CO 1, 2, 3] Labs will be turned in and graded as either Satisfactory (S), Progressing (P), or Incomplete (I). During the lab meetings, students will investigate various topics in calculus using Sage, an open source mathematical software with features useful in many areas of advanced mathematics, or Excel. Possibly more
helpful than the actual mathematics in the lab assignments, you will practice organizing your thoughts, develop a working understanding of mathematical and coding operations, and troubleshoot coding errors.

- **A comprehensive final exam**—[CO 1, 2, 3] The final exam is Wednesday, May 15, 10:30am – 12:30pm. The final exam will cover all of the core learning targets and a subset of the supplemental learning targets.

- **Online Homework**—[CO 1, 2, 3] For roughly each learning target in the course, there will be a corresponding online homework set with due dates clearly labeled on each assignment. The purpose of these assignments is to allow for practice with computational techniques with immediate feedback (the system will grade your answers upon submission). You are welcome to use your textbook and class notes to complete each homework set. Collaboration with your classmates is also welcome, but ensure that you are continually striving to master the concepts.

Online homework exercises are located on the WeBWorK math homework system at webwork.sfasu.edu. Your WeBWorK login username is the same as your D2L username. If you run into a technical issue or error with WeBWorK (during submissions, for instance), email me a screenshot of the error you receive. In general, late submissions to WeBWorK will not be accepted, and deadlines are set in stone.

Exercises assigned from the text (the list is found in this syllabus) will not be collected for a grade. However, it is crucial to your understanding of the course material that you complete the assigned problems (at a minimum!) as preparation for quizzes, exams, and daily participation.

- **Class attendance and participation**—Students are expected to attend all class meetings, arriving on time and actively participating in class discussions. Cell phones and other devices that have the potential to distract you, me, or your classmates should be put away and silenced. If you are absent, you are responsible for determining what you missed and for being prepared for class when you return.

- **Preparing for class**—Students should be prepared to invest several hours per day outside of class reading the text, practicing examples, and working homework exercises. **Material to be discussed in class should be read before coming to class.** Check your university email regularly, as I may send reminders, assignments, or announcements.

**Mastery Grading**

On semester assignments (midterm exams, weekly quizzes, and labs), grades will be assigned differently than is usually done. Instead of using a percentage or points-based system, your grade will be determined by how well you display a mastery of specific sorts of mathematical tasks called learning targets. Since there are no points, there is no partial credit on most items. Indeed, you will find that the grading system in this course insists that you show consistent excellence in all assignments in the course – outstanding work on quizzes, for example, does not “bring up” poor work on labs. This can be challenging, but there is also a revision and reassessment system in place for most assignments that allows you to try a concept more than once to demonstrate understanding.

**Fair warning:** This may be a little more complicated than you are used to. That’s okay! If **at any point** in the semester you need clarification on how the system works or your standing in the course, you are encouraged to come talk with me. The goal with this system is to give you more control over your grade with less stress and to reflect your effort and improvement (not the result of a single bad test day).

We will have approximately 30 learning targets that will be assessed during the semester, divided into two categories: Core and Supplemental. These are listed later in this syllabus. Each of these learning targets focuses on a skill or concept of calculus. The Core Learning Targets are the most essential skills, in which every student must show some competency to pass the course. The Supplemental Learning Targets focus on other important calculus skills.

The following sections describe the structure of this grading system and how it will work in our class. Pay close attention in each section to definitions of terms (such as “Complete” vs. “Master,” or “Satisfactory”).
How your Final Course Grade is Determined

See the table below for the requirements necessary to earn each letter grade. Please note the following definitions:

- To **COMPLETE** a learning target, one must earn a Satisfactory (S) grade on that target during a quiz, exam, or reassessment.
- To **MASTER** a learning target, a second grade of Satisfactory (S) must be earned on that same target during a quiz, exam, or reassessment.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| A     | Complete all 12 Core Learning Targets, and **Master** at least 10 of them.  
       | Complete 16 Supplemental Learning Targets, and **Master** at least 10 of them.  
       | Earn **Satisfactory** on at least 5 Labs.  
       | Have a final online homework grade of at least 90%. |
| B     | Complete all 12 Core Learning Targets, and **Master** at least 7 of them.  
       | Complete 14 Supplemental Learning Targets, and **Master** at least 6 of them.  
       | Earn **Satisfactory** on at least 4 Labs.  
       | Have a final online homework grade of at least 80%. |
| C     | Complete all 12 Core Learning Targets, and **Master** at least 4 of them.  
       | Complete 12 Supplemental Learning Targets.  
       | Earn **Satisfactory** on at least 2 Labs.  
       | Have a final online homework grade of at least 70%. |
| D     | Complete 6 Core Learning Targets.  
       | Complete 8 Supplemental Learning Targets.  
       | Earn **Satisfactory** on at least 1 Lab.  
       | Have a final online homework grade of at least 60%. |
| F     | Given if not all the requirements for a D are met. |

*Note: The initial schedule has 6 Labs. If this changes, the table will be updated.*

Grading Standards

**Labs:** Labs will be graded either Satisfactory (S), Progressing (P), or Incomplete (I) based on the following criteria. Individual labs may have other specific criteria as needed. You will be informed of any additional criteria before the initial submission.

<table>
<thead>
<tr>
<th>Mark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>The submission gives complete, clearly-written, and well-reasoned responses to all lab prompts. The write-up is neatly done and easy to navigate. The work uses computer technology (Sage, Excel, etc.) in an effective and appropriate way.</td>
</tr>
<tr>
<td>P</td>
<td>The submission is complete, neatly written up, and uses computer technology effectively and partial understanding of concepts is evident, but there are issues in the writing, mathematics, or reasoning that require revision.</td>
</tr>
<tr>
<td>I</td>
<td>The submission has significant omissions or widespread issues so that not enough information is present to determine whether there is adequate understanding.</td>
</tr>
</tbody>
</table>

**Learning Targets:** Learning targets will also be graded either Satisfactory (S), Progressing (P), or Incomplete (I) based on the following general criteria.

<table>
<thead>
<tr>
<th>Mark</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>The submission gives complete, clearly-written, and well-reasoned responses. The solution is organized in a thoughtful manner and the mathematics is correct, up to 1-2 minor errors which do not call into question your understanding of the calculus concepts.</td>
</tr>
<tr>
<td>P</td>
<td>The submission is complete, neatly written up, and partial understanding of concepts is evident, but there are issues in the writing, mathematics, or reasoning that require revision.</td>
</tr>
<tr>
<td>I</td>
<td>The submission has significant omissions or widespread issues so that not enough information is present to determine whether there is adequate understanding.</td>
</tr>
</tbody>
</table>
Online Homework: Online homework will be graded automatically through WeBWorK using points. One point is awarded when the problem is correct (or, in the case of some multiple-part problems, when each part is correct), and zero points are awarded otherwise. Partial credit may be given in some multi-part problems.

### Revision and Reassessment

**Online Homework:** You may reattempt any online homework set as many times as you want until the deadline for the set. After this deadline, no revision is allowed and your grade on that set is final.

**Labs:** If you receive either a Progressing or Incomplete grade on a submitted lab, you will receive feedback on your work which you can use to make corrections and then resubmit your work for regrading. You may submit up to one lab revision per week for regrading. Please note the following exception for lab revisions:

- Labs that are submitted with one or more of the problems omitted or consisting of trivial or irrelevant work (i.e., the lab is submitted with intentional incompletions in order to “Revise” them later) will not be accepted. They will be marked “Incomplete” and no revision will be possible later.

**Learning Targets:** Learning targets (LTs) will be assessed on weekly quizzes as well as on exams. You may reattempt any LT that receives a Progressing or Incomplete grade in two ways:

- Reattempt a LT during an exam or during certain designated weekly quizzes. Note that you will not be allowed to reattempt any LT on every quiz; I will specify ahead of time which LTs will be assessed on each quiz. During exams, on the other hand, all LTs will be available for reattempting.
- Reattempt a LT during in my office on specified reassessment weeks, subject to the following restrictions:
  - You may reattempt at most two LTs in a given reassessment week. The reassessment weeks are: February 4-8, February 25-March 1, April 1-5, April 8-12, April 29-May 3
  - You must schedule an appointment to reattempt a LT at least 24-hours in advance by emailing me the following information:
    - The LT(s) you wish to reattempt, AND
    - The time you would like to come in.
  - Upon arriving for your appointment, you must hand in a completed Reassessment Ticket, which will ask you to identify your mistakes and share how you prepared to improve your performance on that learning target. No reassessment will be allowed without a completed ticket. These tickets are available on D2L; you may ask for hard copies from me if needed.
  - The allowed length of an appointment is ten minutes for each LT you reassess. This time limit is firm; no extra time will be allowed, including if a student arrives late.
  - Failure to appear for a scheduled appointment may result in a ban from in-office LT reassessments.
  - In-office reassessment appointments are available on a first-come, first-served basis.

Second LT assessments to attain Mastery may also be done in the above ways with the exception that your first attempt at attaining Mastery of a LT must occur on an exam.

### Learning Targets

Below are the learning targets for our course, divided into Core and Supplemental sections. Boxes have been provided as a way to track your progress throughout the semester: Check off one of the boxes to the left of a learning target once your performance on that target merits a Satisfactory (S) score to indicate the completion of that target. Check off the second box upon receiving a second score of Satisfactory on that target to indicate mastery.

#### Core Learning Targets

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>C1</th>
<th>Limits: Graphical. Compute the limit of a function at a specific point using the graph of the function. (2.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>C2</td>
<td>Continuity. Using the appropriate limit definitions, determine and justify whether a function (given graphically or by a formula) is continuous, and classify any discontinuities as removable, jump, or infinite. (2.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C3</td>
<td>Tangent lines. Find the equation of a tangent line to a function at a point. (3.1)</td>
</tr>
</tbody>
</table>
C4 Derivatives using the definition. State and use the limit definition of a derivative (at a point or in general) to find derivatives. (3.1, 3.2)

C5 Rates of Change. Distinguish between, interpret, and compute average and instantaneous rates of change in applied scenarios. (2.1, 3.4)

C6 Derivatives of basic functions. Properly evaluate derivatives of basic functions (constant functions, polynomials, exponentials, and trigonometric functions). (3.2, 3.6)

C7 Product and Quotient Rules. Properly apply the Product and Quotient Rules to find derivatives. (3.3)

C8 Chain Rule. Properly apply the Chain Rule to find derivatives. (3.7)

C9 Local information of functions: Graphical. Given the graph of a function or its derivative, identify intervals of increase and decrease, concavity, local extrema, critical points, and inflection points. (4.3, 4.4)

C10 Graph sketching. Sketch the graph of a function using local information and end behavior. (4.6)

C11 Areas and integrals. Interpret areas under graphs as definite integrals, and use a graph of a function to compute a definite integral. (5.1, 5.2)

C12 Fundamental Theorem of Calculus. Use the Fundamental Theorem of Calculus to compute definite integrals. (5.4)

Supplemental Learning Targets

S1 Limits: Symbolic. Evaluate limits using basic limit laws and substitution. (2.3, 2.4)

S2 Indeterminate forms and algebraic methods. Evaluate limits of indeterminate forms algebraically. (2.5, 2.6, 2.7)

S3 Limits at infinity. Determine the end behavior of a function by considering limits at infinity. (2.7)

S4 Intermediate Value Theorem. Apply the Intermediate Value Theorem to find zeros of functions on given closed intervals or to find solutions to equations. (2.8)

S5 Derivatives: Graphical. Sketch and/or identify the graph of the derivative of a function using the graph of the original function, or vice versa. (3.2)

S6 Differentiability. Determine and justify whether a function is differentiable at a point, and give examples of differentiable and non-differentiable functions. (3.2)

S7 Implicit differentiation. Compute derivatives of functions given implicitly. (3.8)

S8 Derivatives of inverse functions. Compute derivatives of inverse functions, including logarithmic and inverse trigonometric functions. (3.9)

S9 Related rates. Set up and solve related rates problems. (3.10)

S10 Local linearization. Use the local linearization of a function at a specific point to approximate values of a function. (4.1)

S11 Absolute extrema. Find absolute extrema of a continuous function on a closed interval. (4.2)

S12 Local information of functions: Symbolic. Given the formula for a function, identify intervals of increase and decrease, concavity, local extrema, critical points, and inflection points. (4.3, 4.4)

S13 Indeterminate forms and l'Hopital's Rule. Evaluate limits of indeterminate forms using l'Hopital's Rule. (4.5)

S14 Applied optimization. Set up and solve applied optimization problems. (4.7)

S15 Approximating definite integrals. Approximate a definite integral on a closed interval using left-endpoint, right-endpoint, and midpoint approximations. (5.1)

S16 Antiderivatives of basic functions. Compute general antiderivatives (i.e., indefinite integrals) of basic functions (constant functions, polynomials, trigonometric functions, exponential functions). (5.3)

S17 Initial value problems. Solve simple initial value problems. (5.3)

S18 Substitution method for integration. Evaluate definite and indefinite integrals using the substitution method. (5.7)
**Suggested Exercises and Course Outline**

Below are suggested exercises from each section we will discuss. While these exercises will not be collected, they will provide an excellent source of practice outside of class as you work to master each learning topic.

<table>
<thead>
<tr>
<th>MTH 233 – Calculus I Topics</th>
<th>Rogawski/Adams, 3rd edition (Try ALL PQ's to warm up!)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2 Limits: numerical and graphical</td>
<td>p.69: 1, 5-7, 9-55 odds, 56, 57</td>
</tr>
<tr>
<td>2.3 Limit Laws</td>
<td>p.74: 1-35 odds, 36, 37</td>
</tr>
<tr>
<td>2.4 Limits and Continuity</td>
<td>p.82: 1-6, 1-57 every other odd (eoo), 65-81 eoo</td>
</tr>
<tr>
<td>2.5 Evaluating Limits Algebraically</td>
<td>p.88: 1-53 eoo, 28, 34</td>
</tr>
<tr>
<td>2.6 Trig Limits</td>
<td>p.92: 1-57 eoo</td>
</tr>
<tr>
<td>2.7 Limits at Infinity</td>
<td>p.98: 1-4, 7-15 odds, 16-41 eoo</td>
</tr>
<tr>
<td>2.8 Intermediate Value Theorem</td>
<td>p.102: 1-17 eoo, 19, 25-28</td>
</tr>
</tbody>
</table>

**Exam 1**

| 2.1 Limits, rate of change, tangent lines        | p.60: 1-33 eoo                                        |
| 3.1 Definition of Derivative                     | p.118: 1-57 eoo, 23                                  |
| 3.2 Derivative as a Function                     | p.131: 1-41 eoo, 43, 46, 49-61 odds, 65, 71-75 odds |
| 3.3 Product and Quotient Rules                   | p.139: 1-45 odds, 54-57                              |
| 3.4 Rates of Change                              | p.147: 1-7 odds, 9-11, 12, 14, 21, 23, 37, 46(a)& 46(b) |
| 3.5 Higher Derivatives                           | p.154: 1-37 eoo, 39, 42                              |
| 3.6 Trigonometric Functions                      | p.158: 1-53 eoo, 54                                  |
| 3.7 Chain Rule                                   | p.164: 1-73eoo, 75, 79, 87                            |
| 3.8 Implicit Differentiation                     | p.172: 1-69 eoo                                       |
| 3.9 Derivatives of Log and Exp                   | p.180: 1-49 eoo                                      |
| 3.10 Related Rates                               | p.186: 1-37eoo                                       |

**Exam 2**

| 4.1 Linear Approximation (Differentials)         | p.198: 1-45 eoo                                      |
| 4.2 Extreme Values                               | p.206: 1-69 eoo, 86-89, 92, 95                      |
| 4.3 Mean Value Theorem, Monotonicity             | p.215: 1-61 eoo, 24, 72                              |
| 4.4 Shape of a Graph                             | p.221: 1-19 eoo, 22, 23, 29-57eoo, 58-60             |
| 4.5 L'Hopital's Rule                             | p.229: 1-77 eoo                                      |
| 4.6 Graph Sketching and Asymptotes               | p.237: 1, 3, 11, 19, 27, 31, 45, 51, 53, 57-69 eoo  |
| 4.7 Applied Optimization                        | p.244: 1-53 eoo                                      |

**Exam 3**

| 5.1 Approximating and Computing Area             | p.268: 5, 9, 13, 19, 27, 29, 35, 41, 47             |
| 5.2 Definite Integral                            | p.278: 1-65 eoo                                      |
| 5.3 Indefinite Integral                          | p.281: 1-45 eoo                                      |
| 5.4 Fundamental Theorem of Calculus, I          | p.293: 1-53 eoo                                      |
| 5.5 Fundamental Theorem of Calculus, II         | p.298: 1-41 eoo                                      |
| 5.7 Substitution Method                          | p.311: 1-97 eoo                                      |

**Exam 4**

| Final Exam                                       | Wednesday, May 15, 10:30am – 12:30pm                |

**NOTE:** I, Dr. Falahola, reserve the right to make changes to any part of this syllabus as necessary, in the interest of the class. Students will be notified of any changes via email and in class.
The following is an excerpt from SFA Policy 5.4:
The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;

2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

See [http://www2.sfasu.edu/math/docs/syllabi/MTH233Syllabus.pdf](http://www2.sfasu.edu/math/docs/syllabi/MTH233Syllabus.pdf) for elements common to all sections.

**Questions about Mastery Grading:**
Use the space below to jot down any questions you have over the grading system. See if this syllabus addresses your question first, then if further clarification is needed, please ask me for an explanation.
Math 233 (Math 2413) – Calculus I  
Course Syllabus

Course description: Topics include limits, continuity, differential calculus of algebraic and transcendental functions with applications, basic antiderivative with substitution, definite integrals.

Core Objectives (CO):

1. Critical Thinking [CO 1]: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. Communication Skills [CO 2]: to include effective development, interpretation and expression of ideas through written, oral and visual communication
3. Empirical and Quantitative Skills [CO 3]: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

Credit hours: 3

The following is an excerpt from SFA Policy 5.4:
The federal definition of a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates:

1. Not less than one hour of classroom or direct faculty instruction and a minimum of two hours out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or 10 to 12 weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time, or;
2. At least an equivalent amount of work as outlined in item 1 above for other academic activities as established by the institution including laboratory work, internships, practica, studio work, and other academic work leading to the award of credit hours.

To this end, all students in courses offered by the Department of Mathematics and Statistics that wish to be successful should plan to spend a minimum of two hours outside of class for every credit hour associated with this course. Expected activities to be completed in the time outside of class include reviewing notes from previous class meetings, reading assigned course resources, completing all assigned exercises and projects, and performing periodic assessment preparation.

Course Prerequisites and Corequisites: See general course prerequisites.

General Education Core Curriculum: This course has been selected to be part of SFA’s core curriculum. The Texas Higher Education Coordinating Board has identified six objectives for all core courses: Critical Thinking Skills, Communication Skills, Empirical and Quantitative Skills, Teamwork, Personal Responsibility, and Social Responsibility. SFA is committed to the improvement of its general education core curriculum by regular assessment of student performance on these six objectives. Assessment of these objectives at SFA will be based on student work from all core curriculum courses. This student work will be collected in D2L, the assessment management system selected by SFA to collect student work for core assessment.

The chart below indicates the core objectives identified by SFA to be assessed in this course. The instructor of each section of the course will provide the assignment(s) that will be used to assess the objectives as well as the date(s) by which the assignments must be completed and uploaded in D2L.

<table>
<thead>
<tr>
<th>Core Objective</th>
<th>Definition</th>
<th>Course Assignment Title</th>
<th>Date Due in D2L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Skills</td>
<td>To include effective development, interpretation and expression of ideas through written, oral, and visual communication.</td>
<td>The instructor of each section will determine the assignment for this assessment.</td>
<td>Only assessed in the fall of even years (See instructor of your section for due date(s).)</td>
</tr>
</tbody>
</table>
Course outline:

- Limits and continuity [CO 1, 2, 3]
  - Limits at a point
    - Formal definition
    - Existence
    - Infinite limits/vertical asymptotes
  - Limits to infinity/horizontal asymptotes
  - Algebraic evaluation
    - Basic rules/techniques
    - Sandwich Theorem
  - Continuity/Intermediate Value Theorem

- Derivatives and antiderivatives [CO 1, 2, 3]
  - Definition of derivative/interpretations
  - Derivative rules
    - Basic rules
    - Transcendental rules
    - Product and Quotient rules
    - Chain rule/implicit differentiation
  - Antiderivative rules
    - Basic rules
    - Transcendental rules
    - Substitution

- Applications of derivatives [CO 1, 2, 3]
  - Related rates
  - Position, velocity, and acceleration
  - Extreme values/optimization
  - Mean Value Theorem
  - Curve sketching
  - Newton’s method
  - L’Hospital’s Rule

- Definite integration [CO 1, 2, 3]
  - Definition of the definite integral/interpretations (area, etc.)
  - Riemann sums
  - The Fundamental Theorem of Calculus
  - Definite integrals with substitution

- Explicit instruction in Critical Thinking, Communication and Empirical and Quantitative Reasoning is in addition to implicit instruction, modeling and practice that occur daily in the discussion of limits and continuity, derivatives and antiderivatives, applications of derivatives and definite integration. This explicit instruction includes explanation of solving mathematical problems by thinking critically, communicating logically ordered solutions with complete and correct notation, and applying empirical or quantitative skills as appropriate to the problem.

Approximate time spent

30%
30%
25%
10%
5%

Academic Integrity

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

The penalty for a student found cheating on any part of an assignment, quiz, or exam in this class will range from a grade of zero on the work to a grade of F in the course, and may result in additional, more severe disciplinary measures. A student who allows another to copy his work and the student copying the work are both guilty of cheating. Do your own work. Do not show your completed work to others. Do not allow others to copy your work.
Definition of Academic Dishonesty (SFA policy 4.1):
Academic dishonesty includes both cheating and plagiarism. Cheating includes, but is not limited to:

- using or attempting to use unauthorized materials on any class assignment or exam;
- falsifying or inventing of any information, including citations, on an assignment;
- helping or attempting to help other student(s) in an act of cheating or plagiarism.

Plagiarism is presenting the words or ideas of another person as if they were one's own. Examples of plagiarism include, but are not limited to:

- submitting an assignment as one's own work when it is at least partly the work of another person;
- submitting a work that has been purchased or otherwise obtained from the Internet or another source;
- incorporating the words or ideas of an author into one's paper or presentation without giving the author credit.

Withheld Grades Semester Grades (SFA Policy 5.5)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average. The circumstances precipitating the request must have occurred after the last day in which a student could withdraw from a course. Students requesting a WH must be passing the course with a minimum projected grade of C.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy 10.4). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

Program Learning Outcomes: Students graduating from SFA with a B.S. Degree and a major in mathematics will:

1. Demonstrate Lower Order Cognition (LOC). Examples: remembering definitions, understanding how to factor, applying the chain rule.
3. Demonstrate proficiency in communicating mathematics in a format appropriate to expected audiences (written, visual, oral).

Student Learning Outcomes (SLO): At the end of MTH 233, a student who has studied and learned the material should be able to:

1. Find limits using graphs, algebraic techniques, and L'Hopital's Rule. [PLO:1,3], [CO: 1,3]
2. Demonstrate an understanding of the connection between limits and asymptotic behavior in functions. [PLO: 2,3] , [CO: 1,2,3]
3. Recognize and construct continuous functions. [PLO: 1,2,3], [CO: 1,3]
4. Connect the definitions of the derivative and definite integral to their geometric interpretations and applications. [PLO: 2,3], [CO: 1,3]
5. Find derivatives and antiderivatives of algebraic and transcendental functions, including compositions of functions. [PLO: 1,3], [CO:1,3]
6. Use implicit differentiation to solve related rates problems and to determine derivative rules for inverse transcendental functions. [PLO: 1,2,3], [CO:1,3]
7. Use information revealed by limits and derivatives to sketch graphs of functions and find extreme values of functions on given intervals. [PLO:1,2,3], [CO: 1,2,3]
8. Convey the connections between limits, derivatives, and integrals. [PLO:2,3], [CO: 1,3]
9. Use the Fundamental Theorem of Calculus to evaluate definite integrals. [PLO: 1,2,3], [CO: 1,3]

Date of document: 01/11/2019