Welcome to Math 155! The Math 155 sections have been divided into two groups: the engineering sections and the non-engineering sections. You are in a non-engineering group. This course satisfies the following GEC objective - Basic Math and Scientific Inquiry: Use quantitative and scientific knowledge effectively.

**Course Coordinator:**  
Dr. Vicki Sealey  
Office: 308-J Armstrong  
E-mail: sealey@math.wvu.edu

**Lead Instructor:**  
Jennifer Manor-Kearns  
Office: 410-H Armstrong  
E-mail: jmanor@math.wvu.edu

**My Instructor:**  
____________________________  
E-mail:_____________________

**My TA:**  
____________________________  
E-mail:_____________________

Office Hours: You may attend the office hours of any of the instructors who are teaching Math 155 this semester. A list of their office hours will be provided to you soon.

**Course e-mail:** calc1@math.wvu.edu  
Of course, please ask your instructor or TA questions first. If you still have questions, feel free to use the e-mail above. In any e-mail, please include your first and last name and your section number.

**Course website:** http://math.wvu.edu/155/calculus/  
Check both e-campus and the course website regularly for course information.

**Required Course Materials:**

1. **Textbook:** Essential Calculus: Early Transcendentals, 1st Edition, by James Stewart OR the WVU custom version that is sold at the bookstores. Instead of purchasing a hard copy, you are welcome to purchase access to the e-book, available through WebAssign. This is the same textbook that is used in Math 156 and Math 251 (Calculus 2 and 3).

2. **Calculator:** You will need a scientific calculator for this class, and you will be able to use the calculator on some quizzes and exams. If your calculator has the capacity to store information, you will be required to clear the memory before each test or quiz. A graphing calculator is not required, but is strongly recommended. Calculators with a CAS will NOT be allowed on quizzes or exams. (Ex: TI-89 and above will not be allowed.)

3. **WebAssign:** This is the online homework system that we will be using this semester. You are required to purchase access to this system for this class. Everyone has free access for two weeks, but fees must be paid by the end of the second week of classes.
**Prerequisites:** Each student in Math 155 must satisfy the prerequisites for this course. (Sufficient score on the WVU Math Placement Exam, sufficient score on the ACT/SAT, or a C or better in both Math 126 and Math 128). Be sure to check your mix e-mail during the first week of classes. If the department believes that you do not meet the prerequisites, you will receive an e-mail and will be required to show documentation of how you meet the prerequisites. If you do not provide the appropriate documentation, you will be dropped from this course.

Note: Math 153/154 is a two-semester course that covers the same material as we do in one semester in Math 155, with more time to review prerequisite material. Students who need credit for Math 155 for their major have the option of taking Math 153/154 instead of Math 155.

**Goals:** The goal of this course is to learn the concept of limit in many areas of differential calculus. The beginning concepts of the Riemann Sum and anti-derivative will be learned in preparation for Calculus II. We will cover through section 5.3 in your textbook as well as some material presented in class that is NOT in the textbook. **Thus, it is imperative that you attend each class.**

**Academic Integrity:** The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, instructors will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at [http://www.arc.wvu.edu/admissions/integrity.html](http://www.arc.wvu.edu/admissions/integrity.html). Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see your instructor or the course coordinator before the assignment is due to discuss the matter.

**Grading:** Throughout this course, you will be graded not only on your ability to obtain the correct answer to a problem, but also on your ability to use the problem solving methods taught in this course and your ability to justify your work. **A CORRECT ANSWER WITHOUT THE SUPPORTING WORK WILL BE GIVEN NO CREDIT.** This applies to exams, homework, quizzes, and in-class activities. When in doubt, show all of the steps!!

**Social Justice Statement:** West Virginia University is committed to social justice. We concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in your class will be appreciated and given serious consideration.

**Disability:** If you are a person with a disability and anticipate needing any type of accommodation in order to participate in your class, please advise your instructor and make appropriate arrangements with Disability Services (293-6700). In particular, if you are allowed extra time for examinations, please give your instructor the appropriate paperwork ASAP so that we can make the appropriate accommodations for your exams. Please note that your instructor will give a copy of this paperwork to the course coordinator.
**Course Grades:** Your course grade will be broken into the following components. *Refer to the section below on "Gateway Questions" when calculating your course grade.

<table>
<thead>
<tr>
<th>Instructor Assigned course work</th>
<th>Quizzes (scheduled in advance)</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinated course work</td>
<td>Instructor Assigned Homework &amp; In-class activities</td>
<td>10%</td>
</tr>
<tr>
<td>WebAssign Online Homework</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Coordinated Projects</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Test 1</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Test 2</td>
<td>12%</td>
<td></td>
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<tr>
<td>Test 3</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Test 4</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Comprehensive Final Exam</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>

**Grading Scale:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100.0-90.0</td>
</tr>
<tr>
<td>B</td>
<td>89.9-80.0</td>
</tr>
<tr>
<td>C</td>
<td>79.9-70.0</td>
</tr>
<tr>
<td>D</td>
<td>69.9-60.0</td>
</tr>
<tr>
<td>F</td>
<td>Less than 60</td>
</tr>
</tbody>
</table>

**In-class Activities:** A portion of your grade is based on activities completed during each class. These are rarely (if ever) announced prior to class, so it is imperative that you attend every class. Examples include (but are not limited to) pop-quizzes, in-class worksheets, group activities, and attendance points. Under certain circumstances (excused absences or special circumstances), your instructor MAY allow you to make up some of the points that you missed. This is completely at the discretion of your instructor, and you should not expect this opportunity.

**Quizzes:** Quizzes are not common across all sections. Your instructor will write your quizzes based on material covered in your course. Quizzes will be announced at least one class period prior to the quiz. (Pop-quizzes will be counted as part of your in-class activity grade.) Each instructor will determine his/her own makeup policy for quizzes.

**Instructor Assigned Homework:** In addition to the online homework, each instructor will assign homework to his or her particular class. Unless otherwise specified by your instructor, you are encouraged to work with classmates on homework assignments. However, each student must submit his or her own written work. Assignments that are very similar may be considered copying. Each instructor will determine his/her own late policy.
**WebAssign Homework:** This is the online homework. The exercises are common across all sections. Late work will be accepted three days after the due date for 80% credit. Even on assignments not yet fully completed, any work finished before the due date will not have credit deducted. You will be able to access WebAssign materials beginning the first week of classes. **You will log in for the first time in class. Before this date, online materials for this course will not be available.** Go to www.webassign.net to log in. Your username is your MixID and your password is "math155". Of course, change your password the first time you log in.

**Coordinated Projects:** Since this is a coordinated course, some of your assignments and activities throughout the semester will be completed by all students in all sections of non-engineering Math 155. These assignments will consist of group projects to be completed during class time as well as individual projects to be completed outside of class. Deadlines on projects are firm. Late work will only be accepted for 24 hours after the original due date/time, and will include a 50% grade deduction.

**Testing Procedures:** All of the non-engineering sections will take common tests and a common final exam. Dates and times are listed below. Testing locations will be verified in class prior to each test.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Times</th>
<th>Locations (tentative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>Tuesday, September 16</td>
<td>5:30 PM - 7:00 PM</td>
<td>TBA</td>
</tr>
<tr>
<td>Test 2</td>
<td>Tuesday, October 7</td>
<td>5:30 PM - 7:00 PM</td>
<td>TBA</td>
</tr>
<tr>
<td>Test 3</td>
<td>Tuesday, October 28</td>
<td>5:30 PM - 7:00 PM</td>
<td>TBA</td>
</tr>
<tr>
<td>Test 4</td>
<td>Tuesday, November 18</td>
<td>5:30 PM - 7:00 PM</td>
<td>TBA</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Tuesday, December 16</td>
<td>7:00 PM – 9:00 PM</td>
<td>TBA</td>
</tr>
</tbody>
</table>

If you miss an exam, your grade will be recorded as a zero. Make-up tests must be approved by both the course coordinator and your instructor and will only be given in extreme situations with official documentation. Make-up tests will be different from the regular tests.

Students who have registered with WVU Student Disability Services will be provided accommodations specified by that office. Please provide your instructor with the appropriate paperwork as soon as possible so that we make sure we can accommodate your needs.
**Gateway Questions:** Certain questions on exams this semester will be designated as gateway questions. These questions are designed to test your understanding of the fundamental concepts of calculus and must be mastered to receive a C in Math 155. Topics of gateway questions are listed below.

- **Gateway 1 - Test 1**  Graphical Limits
- **Gateway 2 - Test 1**  Definition of Derivative (quadratic function)
- **Gateway 3 - Test 2**  Basic Derivative Rules (Power rule, chain rule, etc.)
- **Gateway 4 - Test 4**  Basic Antiderivative Rules
- **Gateway 5 - In Class**  Gateway Review

Please note that answering the gateway questions correctly does not guarantee that you will be given a C in the course or on the exam. Passing the gateway questions means that your grade in the course will be determined according to the rubric listed on page 3 of this syllabus.

If you fail a gateway question on a regular exam, then you will be given an opportunity to redo the gateway question during office hours. This will not change your exam score, but will allow for your grade in the course to be determined according to the rubric listed previously in this syllabus. More details will be given throughout the semester on second chances for gateway questions. **All gateways need to be passed by 7:00PM on Tuesday December 9, 2014.**

**Help Outside the Classroom:** There are several ways to seek help with your homework when you are not in class.

1. You may attend the office hours of any of the instructors who are teaching Math 155 this semester. A list of their office hours will be provided to you soon. If office hours are busy, each instructor will help students from his or her own sections first.
2. You may also stop by the Math Learning Center, 301 Armstrong, where you may receive FREE tutoring from the graduate teaching assistants and undergraduate math majors. Hours of operation are posted at the MLC. This is a *great* place to work on your homework alone or with classmates.
3. You are able to use the IML Computer Lab during open lab hours. These times will be listed on the course website. Tutors are often available in this location.
4. Tutoring is available in the University Learning Centers in the residence halls.
5. You may also wish to hire a private tutor. Several graduate students are available for tutoring. They usually charge $15 per hour of tutoring. A list of tutors is available in the Math Office, 320 Armstrong Hall.

* This syllabus is subject to change. Check e-campus and the course website for updates.
**Topic List**

1.3 The Limit of a Function\(^1\)
1.4 Calculating Limits
1.5 Continuity
1.6 Limits Involving Infinity

2.1 Derivatives and Rates of Change
2.2 The Derivative as a Function
2.3 Basic Differentiation Formulas
2.4 The Product and Quotient Rules
2.5 The Chain Rule
2.6 Implicit Differentiation
2.7 Related Rates
2.8 Linear Approximation and Differentials\(^2\)

3.1 Exponential Functions
3.2 Inverse Functions and Logarithms
3.3 Derivatives of Logarithmic and Exponential Functions
3.4 Exponential Growth and Decay\(^3\)
3.5 Inverse Trigonometric Functions
3.7 Indeterminate Forms and L’Hospital’s Rule

4.1 Maximum and Minimum Values
4.2 The Mean Value Theorem
4.3 Derivatives and the Shapes of Graphs
4.4 Curve Sketching
4.5 Optimization Problems
4.6 Newton’s Method\(^4\)
4.7 Antiderivatives

5.1 Areas and Distances
5.2 The Definite Integral
5.3 Evaluating Definite Integrals\(^5\)

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\(^1\) We will not cover the epsilon-delta definition of the limit at this point in the semester.
\(^2\) We will not fully cover differentials.
\(^3\) This section is optional at WVU. It may not be covered.
\(^4\) This section is optional at WVU, but we will cover it.
\(^5\) This includes part of the Fundamental Theorem of Calculus.
Suggested Textbook Problems  
Math 155 Non-Engineering Calculus  
Fall 2014  

Note: Tests will cover material from the textbook as well as material presented in class that is not in the textbook. This sheet only lists the textbook problems. Of course, you should understand the concepts behind the problems, and not just simply memorize how to do each problem.

Prerequisite Material / Review
1.1 1-6, 15, 17, 19, 21, 23, 25, 27, 33, 37, 45-48, 53, 57, 59, 61
1.2 1, 5, 7, 13, 23, 27, 33, 41, 43, 54, 61
3.1 3-6, 15-18
3.2 1-19, 21-30, 43-54, 61-68

Test 1 Material
1.3 1, 2, 3-10
1.4 1, 2, 10-24, 37
1.5 6-8, 13-16, 25, 26, 31-33, 35, 37-40 (Challenge: 41, 42, 47)
1.6 1-8, 13-31, 33, 34, 41, 45 (Challenge: 38, 39)
3.1 23-30
3.2 69-74
2.1 10-15, 23-28, 37, 38, 41, 42
2.2 17-23

Test 2 Material
2.1 3-6, 16-20, (Challenge: 47, 48)
2.2 1-14, 27-30, 33-35, 44
2.4 1-47 (Challenge: 51-54)
2.5 7-51, 53-59, 61 (Challenge: 60)
3.3 1-44, 63-66 (Challenge: 61)
2.8 1-16 (especially 11-14), 27
4.1 1, 3-10, 12-14, 23-47 (odd), 55, 58, 59 (Challenge: 61)
4.2 1-20, 34, 35

Test 3 Material
3.7 1-36, Also see Section 1.4: 43-48 (Challenge: 39-41, 46)
4.3 1-11, 13-22, 23-29, 35, 36, 50, 56, 58 (Challenge: 48, 49)
2.6 1-26, 31, 41, 42 (Challenge: 44)
3.3 45-58

Test 4 Material
2.7 1-26, 33, 34
3.5 1-10 (review material), 13-27, 32-34
Know how to derive the derivatives of all six inverse trig functions
4.5 1-13, 15-21, 43, Also look at the examples in the book. (Challenge: 29, 46)
4.7 1-37, 41, 44-47 (Challenge: 43, 48, 49)

Additional Material for Final Exam
4.6 1-6, 9-12, 23, 25, 27 (Challenge: 28)
5.1 7-14
5.2 7, 11, 15, 16, 25, 26, 29-42
5.3 1-17, 41, 42, 55-58, 61, 63, 64