Math 155: Calculus I  
Fall 2020 – Fully Online

Instructor: Sarah Littlewood  
E-mail: sarah@wustl.edu or slittlew@gmail.com (preferred – previous address will forward here)  
Note: I check email frequently on the weekdays, but not as often on the weekends. If you submit a request through WebAssign and want a quicker response, then please email one of the above addresses.

Phone: (314)-681-6021 (Cell)  
Office Hours: By Appointment

Textbook: Calculus: Early Transcendentals, Eighth Edition, by James Stewart. You will need access to WebAssign for homework. This may be purchased (with access to the e-text) directly from WebAssign. See Canvas Student Orientation Module for more details.

Course Description: First course in differential calculus covering functions, limits, continuity, derivatives, techniques of differentiation, and applications including maxima and minima of functions, curve sketching, related rates and rectilinear motion, and mean value theorem. Prerequisite: U20-MATH 141 or equivalent, including algebra (with logs and exponents), trigonometry, and some conic sections.

Goals: Upon completion of the course, students will
- Know what a limit is and be able to compute one.
- Be able to determine if a function is continuous.
- Know the definition of the derivative and be able to take the derivative of any algebraic formula using proper notation.
- Be able to estimate a derivative given a table of data.
- Be able to be able to use algebraic notation and logical reasoning to justify results.
- Develop independent logical reasoning given algebraic facts.
- Be able to apply derivatives to solve a variety of applied problems

Important Dates: Check Ucollege calendar for deadlines to change class status (drop, grade options, etc.)
- Sept 14, 2020 – First Day of Class
- Sept 28, 2020 – Last day to drop and receive a full refund
- Dec 4, 2020 – Last day to change grade option (last day to withdraw from course Dec 4)
- Dec 21, 2020 – Final Exam and Last Day of Class

See course schedule below for exam dates.

Format: online
- The class will be split up into weekly modules. Each week we will cover 2-3 sections of our text. Homework will be assigned on a weekly basis. Most weeks will consist of a quiz or a test of the previous module’s material. The modules will start on Mondays.
- The lecture portion of each class meeting will be split into several short videos which will be provided to students to watch in an asynchronous format. Students will be provided with links to the videos.
- The instructor will set up sessions by Zoom or another similar means to allow for in-person office hours when needed.
- The 5 exams will be timed but will be taken asynchronously – students will be given a window of at least 24 hours in which to take each of these exams. The current plan is for exams to last
approximately 2 hours with the item opening at 11 AM on Monday and close at 11:59 AM on Wednesday.
The course format may be subject to adjustment as needed.

Homework and Quizzes:
Homework will be assigned weekly as an “online” component via WebAssign. Doing all the homework is essential for your success in this course. Be careful not to fall into the trap of just following a problem along with the tutorials or online solutions. This should give you a perfect homework grade but will hurt your test/quiz scores. Homework is due by the end of each week (module). Late homework will not be accepted unless there are extreme circumstances. Short quizzes, based on homework, will be given weekly if there is no test. Quizzes will be done through Canvas and turned in as a PDF (See Exams). I will drop your lowest quiz score.

Exams:
There will be four examinations and a final. By the very nature of exams in mathematics courses, later exams require understanding of previous material in the course. The final will not be expressly comprehensive.

Tests will consist of problems (much like the homework/ quizzes or worked problems in the book) to be worked out in detail, with the student supplying all logical reasoning in a neat well-thought out format. Work will be uploaded as a PDF to Canvas. If you do not have access to a scanner, then there are many apps (e.g. CamScanner) you can freely download that will convert photos of your homework to PDF. The exams will be timed (taking about 2-3 hours each) but will be taken asynchronously – students will have a window of at least 24 hours in which to take each exam. You can use your book, notes, or homework, but not other students. Tests will not be rescheduled except under extraordinary circumstances.

IMPORTANT: Other Issues:
In both quizzes and exams, you must show all work. I will not give credit for an “answer” that appears with no justification or reasoning. How you get to the answer is at least as important as the final result. The ability to express your ideas in a clear manner using proper algebraic notation is very important (both in this class and in general). My ability to grade your quizzes and exams will be limited by my ability to understand what you have written.

Grading:
Your score in this class will be determined by weighting your homework, quizzes, and exams as follows:

<table>
<thead>
<tr>
<th>Homework on WebAssign</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekly Quizzes (I will drop the lowest score)</td>
<td>30%</td>
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<tr>
<td>5 exams including the final (weighed equally)</td>
<td>60%</td>
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</tbody>
</table>

Individual homework problems will be worth varying amounts of points. (So more complicated problems or problems with multiple parts will be worth more.)

This score will determine the Final Grade for the course using a scale no more severe than the following.

<table>
<thead>
<tr>
<th>A</th>
<th>94 % and above</th>
<th>C</th>
<th>74 – 77.49 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-</td>
<td>90 – 93.99 %</td>
<td>C-</td>
<td>70 – 73.99 %</td>
</tr>
<tr>
<td>B+</td>
<td>87.5 – 89.99%</td>
<td>D+</td>
<td>67.5 – 69.99%</td>
</tr>
<tr>
<td>B</td>
<td>84 – 87.49 %</td>
<td>D</td>
<td>62 – 67.49 %</td>
</tr>
<tr>
<td>B-</td>
<td>80 – 83.99 %</td>
<td>D-</td>
<td>60 – 61.99 %</td>
</tr>
<tr>
<td>C+</td>
<td>77.5 – 79.99 %</td>
<td>F</td>
<td>0 – 59.99 %</td>
</tr>
</tbody>
</table>
A grade of A+ will be given only for extraordinary performance and at the Instructor’s sole discretion.

For those of you taking the course Pass/No Pass, a grade of 62% or better will be required to receive a Pass. If you are curious about your grade at any time, please email me (or see Canvas). I will not do an incomplete unless there are extreme circumstances.

Software/Calculators:

You will need a scientific calculator for the course. You may use the one on your computer, but you will need to occasionally compute sines, tangents, logs, and exponentials in the applications we will study toward the end of the course.

However, I expect you to show all work and describe the process you used to get the solution. I will grade primarily on the process you used to get to the solution. A correct numerical answer with no explanation of how it appears will receive only a small amount of credit.

Canvas and WebAssign:

I will post course documents and your grades throughout the course on Canvas. Canvas is available at https://mycanvas.wustl.edu/ (https://mycanvas.wustl.edu/studentsupport/ for help). You will need your WUSTL Key ID and Password to log in. Please check to make sure you can log in ASAP.

All homework will be posted in WebAssign (http://www.webassign.net). I will provide a link to WebAssign in your Canvas module. More information on how to log into WebAssign will be on Canvas.
<table>
<thead>
<tr>
<th>Start Date</th>
<th>Topics</th>
<th>Sections – homework is due the following week</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/14</td>
<td>REVIEW: Functions, Common functions, Transformations of Functions</td>
<td>1.1-1.3</td>
</tr>
<tr>
<td>9/21</td>
<td>REVIEW: Inverse Functions, Exponential and Logarithmic Functions, Quick Trig review</td>
<td>1.4, 1.5, App. D</td>
</tr>
<tr>
<td>9/28</td>
<td>NEW Material: Introduction to Limits: Tangents and Velocity, Intro to limits, Calculating Limits</td>
<td>2.1-2.3, Exam 1</td>
</tr>
<tr>
<td>10/5</td>
<td>Calculating Limits, (Precise Definition- if time and interest), Continuity, Horizontal Asymptotes</td>
<td>(2.4), 2.5, 2.6</td>
</tr>
<tr>
<td>10/12</td>
<td>Horizontal Asymptotes, Infinite Limits, Intro to derivatives, Derivative as a function</td>
<td>2.7, 2.8</td>
</tr>
<tr>
<td>10/19</td>
<td>Derivatives of polynomials and exponential functions; Differentiation Rules (including product and quotients)</td>
<td>3.1, 3.2, Exam 2</td>
</tr>
<tr>
<td>10/26</td>
<td>Derivatives of Trig functions and Chain Rule</td>
<td>3.3, 3.4</td>
</tr>
<tr>
<td>11/2</td>
<td>Implicit Differentiation, Derivatives of Logarithmic Functions</td>
<td>3.5, 3.6</td>
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<tr>
<td>11/9</td>
<td>Rates of change, Exponential Growth and Decay</td>
<td>3.7, 3.8, Exam 3</td>
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<tr>
<td>11/16</td>
<td>Related Rates, Linear Approximation, (Hyperbolic functions-if time)</td>
<td>3.9, 3.10, (3.11)</td>
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<tr>
<td>11/23</td>
<td>Finding Global Maximum and Minimum Values; MVT (short week)</td>
<td>4.1, 4.2</td>
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<tr>
<td>11/30</td>
<td>Intervals of Increase/Decrease, Relative Maxima and Minima, Concavity, Points of Inflection,</td>
<td>4.3, Exam 4</td>
</tr>
<tr>
<td>12/7</td>
<td>Indeterminant forms and L'Hospital's Rule; Curve sketching,</td>
<td>4.4, 4.5</td>
</tr>
<tr>
<td>12/14</td>
<td>Optimization, Antidifferentiation</td>
<td>4.7, 4.9</td>
</tr>
<tr>
<td>12/21</td>
<td>Final</td>
<td>Final Exam</td>
</tr>
</tbody>
</table>
Additional Information

Notice on Technical Requirements and Supported Browsers
- Canvas works best in the most recent version of all major browsers. You can also double-check that your browser is supported.
- Be sure you have downloaded the most recent version Java and/or a Java plug-in. This free software program helps you to be able to access certain Canvas tools. You can check which version of Java you currently have and update it (if necessary) by visiting www.java.com. Keep Java updated for best results.
- The use of audio and video tools within the content editor may require the use of Adobe Flash.

Technical Support
This is a fully online, technology-based course. Because computers are not perfect, plan on having technical issues at least once during the term. While this can cause some incredibly frustrating moments, the overall benefits of the technology do outweigh any issues that may arise. Just be ready to contact technical support in the event of difficulties. Send an email to student.technology@wustl.edu or call 935-8200 with any questions/problems concerning Canvas. (This is technical support for any problems you experience within the Canvas classroom only, not other external software). For additional Canvas support:
- Chat with a Canvas Support Agent (accessible by clicking “Help” in lower left corner of the classroom)
- Call the Canvas Support Line (Students) +1-844-865-2581

“Netiquette” Statement on Internet Communication
- Remember your audience. If you would not say it in a face-to-face classroom, do not include it in the online discussions either. Consider what you write, as it is a permanent record and can be retrieved easily. Use courtesy and common sense in all your electronic communications.
- Write in complete sentences and check spelling before you post anything in class.
- DON'T TYPE IN ALL CAPS. This is hard to read and is considered "shouting."
- Respect the opinions of others and be sensitive to the diverse nature of people in the class. Keep in mind that although you cannot "see" your classmates, you can show respect for individual differences. Diversity issues may include the following and others: race, ethnicity, religion, disabilities, gender, sexual orientation, age, social class, marital status, urban vs. rural dwellers, etc.
- No profanity will be allowed. This includes writing in punctuation. For example, $$%$#! is considered profanity and is not permitted. Also, language expressed in inappropriate acronyms is not acceptable.

Expectations for Student Attendance (Canvas log-ins, response to emails, discussions, hours per week students should expect to devote to the class, etc.)
You are expected to have an active presence within Canvas (our online classroom) and that is one of the ways in which I will monitor your attendance in the course. I am able see when last you logged into Canvas and how much time you've spent in various areas of the classroom. The class is not self-paced because we have specific due dates for all assignments, but you will work on the course at your own convenience within those parameters. Lack of participation in discussions or not answering email messages sent to you will be considered lack of attendance and will result in a loss of points.

Statement Regarding Course Evaluations
I sincerely value your feedback about this course. University College students are encouraged to submit course evaluations at midterm and end-of-semester.

Statement Regarding Grades of “Incomplete”
Grades of *incomplete* are rare and are reserved for medical crises or other documented emergencies occurring late in the semester. Incompletes are reserved for students who were otherwise making satisfactory progress in the course prior to the emergency and will be allowed at the instructor’s discretion.

**Statement Regarding Academic Honesty**
Students are bound by the [University College policy on academic integrity](https://www.wustl.edu/acadpol/pol2.html) in all aspects of this course. All references to ideas and texts other than the students’ own must be so indicated through appropriate footnotes, whether the source is a book, an online site, the professor, etc. All students are responsible for following the rules outlined in the document regarding the university academic integrity policy. All students are expected to abide by proper citation and attribution techniques.

**Academic Support**
All University College students are encouraged to take advantage of the following Academic Support services on campus:

- **The Learning Center**: [The Learning Center](https://learningcenter.wustl.edu/) provides access to academic peer mentoring, assists students with essential study and test-taking skills.
- **The Disability Resource Center**: [The DRC](https://drc.wustl.edu/) offers disability resources to students in need.
- **Writing Center**: The [Writing Center](https://writingcenter.wustl.edu/) staff members are writers helping writers through the process of revision. They are undergraduate students, graduate students and faculty members who love to write and to help others clarify their thoughts and ideas. The Writing Center and The Speaking Studio at Washington University in St. Louis provide free, one-on-one tutoring to all WUSTL students for any writing or public speaking project. Students interested in using the Writing Center should call in advance to make an appointment.
- **Arts & Sciences Computing**: [Arts & Sciences Computing](https://artsandsciences.wustl.edu/services/computing-software/) operates two labs that are open to students, faculty, and staff.
- **Library**: [Washington University Libraries](https://library.wustl.edu/) boast an impressive array of services, including course reserves, interlibrary loan, reserved study spaces, the Arc Computing Lab, and so much more.

**Student Accommodations**
Washington University is committed to providing equal opportunity for students with disabilities. The Disability Resource Center (DRC) assists students with disabilities by providing services and arranging for reasonable accommodations to ensure equal access and equal academic opportunities. Students wishing to request services or accommodations must register and provide appropriate documentation to the DRC. The DRC serves as a resource and advisor to students with disabilities and welcomes opportunities to consult with students, families, faculty, and staff. This online course has been designed with accessibility in mind. Be sure to visit the [Canvas accessibility statement](https://v.labs.wustl.edu/accessibility) for more information on these features and reach out to your instructor should accessibility issues arise.

**Inclusive Learning Environment Statement**
The best learning environment—whether in the classroom, studio, laboratory, or fieldwork site—is one in which all members feel respected while being productively challenged. At Washington University in St. Louis, we are dedicated to fostering an inclusive atmosphere, in which all participants can contribute, explore, and challenge their own ideas as well as those of others. Every participant has an active responsibility to foster a climate of intellectual stimulation, openness, and respect for diverse perspectives, questions, personal backgrounds, abilities, and experiences, although instructors bear primary responsibility for its maintenance.

A range of resources is available to those who perceive a learning environment as lacking inclusivity, as defined in the preceding paragraph. If possible, we encourage students to speak directly with their instructor about any suggestions or concerns they have regarding a particular instructional space or situation. Alternatively, students
may bring concerns to another trusted advisor or administrator (such as an academic advisor, mentor, department chair, or dean). All classroom participants—including faculty, staff, and students—who observe a bias incident affecting a student may also file a report (whether personally or anonymously) utilizing the online Bias Report and Support System.

Preferred Name Policy for Students
The Preferred Name policy at Washington University in St. Louis lets students change their names in most university information systems without pursuing a legal name change. Learn how!

Accommodations Based on Sexual Assault
The University is committed to offering reasonable academic accommodations to students who are victims of sexual assault. Students are eligible for accommodation regardless of whether they seek criminal or disciplinary action. Depending on the specific nature of the allegation, such measures may include but are not limited to: implementation of a no-contact order, course/classroom assignment changes, and other academic support services and accommodations. If you need to request such accommodations, please direct your request to Kim Webb (kim_webb@wustl.edu), Director of the Relationship and Sexual Violence Prevention Center. Ms. Webb is a confidential resource; however, requests for accommodations will be shared with the appropriate University administration and faculty. The University will maintain as confidential any accommodations or protective measures provided to an individual student so long as it does not impair the ability to provide such measures.

If a student comes to me to discuss or disclose an instance of sexual assault, sex discrimination, sexual harassment, dating violence, domestic violence or stalking, or if I otherwise observe or become aware of such an allegation, I will keep the information as private as I can, but as a faculty member of Washington University, I am required to immediately report it to my Department Chair or Dean or directly to Ms. Jessica Kennedy, the University’s Title IX Coordinator. If you would like to speak with the Title IX Coordinator directly, Ms. Kennedy can be reached at (314) 935-3118, jw kennedy@wustl.edu, or by visiting her office in Umphasis Hall, Rm. 001. Additionally, you can report incidents or complaints to Sheryl Mauricio (314-935-4174 or smauricio@wustl.edu), Associate Dean for Students and Director of Student Conduct, or by contacting WUPD at (314) 935-5555 or your local law enforcement agency.

You can also speak confidentially and learn more about available resources at the Relationship and Sexual Violence Prevention Center by calling (314) 935-8761 or visiting the 4th floor of Seigle Hall.

Bias Reporting
The University has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University’s Bias Report and Support System (BRSS) team.

General Tips for Success in the Online Classroom:
Welcome to our online course! The following is a list of helpful information that represents habits of students who have succeeded in online courses. These tips should help each of you to have a positive experience as well.

1. **GET STARTED:** Remember that this online course begins on day one of the semester. Log in early during the first week to print the syllabus, become oriented to the online classroom, and get to know your professor and classmates. Waiting until the end of the first week to get started may derail your efforts to succeed before you know it.
2. **STAY ORGANIZED.** Bookmark our course websites (Canvas, Online Dictionary, other websites indicated by professor etc.) Create a special binder or folder to organize any printed materials. Study time will be easier and more fruitful if you are organized and up to date.

3. **INTERACT WITH YOUR CLASSMATES.** Students who study in small groups or pairs tend to be more successful. You can help each other to understand difficult points in the unit simply by participating regularly in the Discussion Forums.

4. **SHOW UP & ASK QUESTIONS.** Visit me in office hours occasionally for extra discussion as needed. Make an appointment and we can talk in real time via collaboration software or phone. You can also email me any questions that arise or post them in the “Questions?” discussion forum.

5. **DO THE READING.** The assigned reading is a valuable part of the course. Students who consistently stay up to date on the reading tend to receive higher grades than those who do not. In this class, the reading will consist of.... which will prepare you to participate in the classroom discussion forums.

6. **STUDY “OFFLINE” SOMETIMES.** Although this is an online course, you need not do all of your studying online. Spend time studying away from the computer by taking notes on the readings.

7. **DON’T PROCRASTINATE.** Procrastination will ruin your experience in the class in several ways. Not only does it prevent you from learning what you are here to learn, but it will also cause you to lose a lot of points. Refer to the list of assignment due dates in this syllabus and follow the steps outlined in the study guide in order to better understand how to pace yourself appropriately.

8. **HANG IN THERE!!** If this is your first online class, the experience may challenge you at first, but as long as you keep up with the reading and follow your professor’s instructions, you will develop an understanding of the rhythm of the course after the first unit. See me for help as needed, I am your resource and I want to see you succeed and enjoy this course!

**Guidelines for Discussion Forum Participation**

1. Be sure to write in the **subject** line to whom your message is addressed. Changing the subject line is the number one way to make sure your post is noticed by the intended recipient.

2. Be sure to **sign your name** at the bottom of your messages. Writing your name at the end of each message helps to clarify the author and helps your classmates remember who you are.

3. Before responding to a particular discussion topic, be sure to **complete the reading assignment** of the corresponding unit. Remember that the discussion topics are specifically tied to the readings. Be sure to take your time and write meaningful discussion forum postings. Your ideas and content are important, and issues such as grammar, spelling, accents, vocabulary, and sentence structure count as well. Be sure your posts are well edited before you submit them, since unedited posts do not receive full points.

4. Participate in each discussion over **several days** within the lesson and avoid waiting until the due date to get started. Each discussion requires several posts from you, including replies to classmates. Waiting until the last day to participate minimizes the opportunity to interact your classmates and me and makes discussion participation much less meaningful for you. It will also result in a loss of points.

5. Finally, the discussion forums are meant to be **fun**! Check in often to communicate with your classmates and me.