

**MAT\* K254**

# Calculus I

**Fall 2019**

31804 T1 MW 1:30 – 3:10 pm E 225  
30190 T3 MW 10:30 am – 12:10 pm D 211

**INSTRUCTOR:** Dr. Kelly Molkenthin (pronounced “molk-in-tine”)  
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Email: [kmolkenthin@trcc.commnet.edu](mailto:kmolkenthin@trcc.commnet.edu)

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Office Hours: Mondays 3:25 – 4:25 pm  
Tuesdays 3:45 – 4:45 pm  
Wednesdays 3:25 – 4:25 pm  
Thursdays 11:15 am – 12:15 pm  
and by appointment.

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## COURSE DESCRIPTION:

Prerequisite: MAT\* K186 with a “C” grade or better.

This is a first course in the calculus intended for students who plan on majoring in mathematics, physical science, or engineering technologies. The topics include rate of change, limits, continuity, differentiation of algebraic, trigonometric, exponential and logarithmic functions, differentials, applications of differentiation, definite and indefinite integrals and applications of integration.

## REQUIRED MATERIAL:

- *Calculus: Early Transcendentals, 8<sup>th</sup> Edition.* Stewart. Cengage Learning, 2015. ISBN # 9781285741550
- Graphing calculators will be needed for many homework problems and it is **REQUIRED** that you bring one to **every class**. Cell phones may **not** be used as calculators. \*\*Note: The TI-89 and Inspire may be used for classwork, but are not allowed for quizzes and exams.

<b>GRADING:</b>	3 Exams:	300 points (100 each)
	Weekly Quizzes:	200 points (20 each)
	Final Exam	200 points
	Attendance/Participation/Class Work	50 points
	Total:	750 points

Your final grade is the total number of points you have received divided by the total possible number of points. Final grades will be determined using the scale below:

<b>A</b> → 93% and above	<b>A-</b> → 90 - 92%	
<b>B+</b> → 87 - 89%	<b>B</b> → 83 - 86%	<b>B-</b> → 80 - 82%
<b>C+</b> → 77 - 79%	<b>C</b> → 73 - 76%	<b>C-</b> → 70 - 72%
<b>D+</b> → 67 - 69%	<b>D</b> → 63 - 66%	<b>D-</b> → 60 - 62%

**EXTRA CREDIT:** There will be **no** “extra credit” assignments for this course

**HOMEWORK AND QUIZZES:** Homework will be assigned on a daily basis. The expectation is that you are spending 2-3 hours of reading and doing homework for this class for every one hour we meet in class. Therefore, you should expect to spend **at least 8-12 hours per week** for this class, every week! Please have a separate binder for your homework, and **BRING YOUR HOMEWORK BINDER TO EVERY CLASS MEETING**. Also, **BE SURE TO CHECK YOUR ANSWERS IN THE BACK OF THE TEXT**. If you check the problem in the back of the text and it is not correct, re-do the problem. If you are struggling with the assignment, you need to seek out help from either your instructor or the tutor center ASAP!

Your in-class quizzes will be testing the concepts emphasized from class the previous week and your current homework assignments. There are no make-ups for missed quizzes. You will be given 12 quizzes throughout the semester, only your top 10 scores will count toward your final grade.

**HOMEWORK QUESTIONS:** Class time is reserved for presentation of material. Homework questions will be answered before or after class, or during meetings outside of class time.

**EXAMS:** You will have four in-class exams. Exams are scheduled for the following dates:

- ♦ **Exam 1: Wednesday 10/2/19**
- ♦ **Exam 2: Wednesday 11/6/19**
- ♦ **Exam 3: Wednesday 12/4/19**
- ♦ **Final Exam: Wednesday 12/11/19**

This may change (but hopefully not), depending on how we are doing. Make-ups for exams will be given only in **EXTREME** circumstances and if **PREVIOUS** arrangements are made. You must contact the instructor **PRIOR** to the start of the exam in order for a make-up exam *to even be considered*. No exam will be administered prior to the date/time of the scheduled exam and **if you miss an exam, you will receive a grade of 0 (zero)**. You must be in your seat, ready to go for any test/exam *prior* to the start of the exam. Late arrivals are not allowed. Your final exam is a **2+ hour** final exam on Wednesday, 12/11.

**RETENTION OF PAPERS:** Students are expected to retain all graded work until final grades are received.

**ATTENDANCE & PARTICIPATION:** All students start the semester with 50 \*bonus\* Attendance/Participation points. Points will be deducted for unexcused absences, late arrivals, early departures, cell phone, tablet or computer use during class time, and other distracting classroom behavior (determined by instructor). Attendance is required and will be taken for each class. An absence is excused **ONLY** for valid reasons (to be determined by the instructor) and if notification is given **PRIOR** to a missed class (via email, phone message – **not** word of mouth from another student). Oversleeping, “colds” and “vacations” are examples that are **not** valid reasons for an absence.

\*\*All absences reported by phone or reported to instructor in person **must** be followed up with an email, or they will be considered unexcused. Do your best to not miss ANY classes!! Students are allowed a maximum of 2 excused absences per semester, excused absences will not affect your attendance and participation grade. Unexcused absences *will* lower your attendance and participation grade.

\*\*Also, if you miss a class it is **YOUR** responsibility to get the class notes from another student (refer to your class list) and **BE PREPARED** for the next class meeting (this includes taking scheduled quizzes & exams).\*\*\*

**Note:** Class BEGINS at 10:30 am (T3) and 1:00 pm (T1). It is expected that you will be in your seat and ready to go at 10:30 am (T3) or 1:00 pm (T1). Students arriving after the start of class will lose attendance points for that class. Excessive “lateness” will not be tolerated; it is disruptive to both the instructor and the class. Emergencies and special circumstances can typically be accommodated – especially when discussed with the teacher in advance. However, regular late arrivals and early departures are unwanted interruptions that affect the classroom as a whole.

## LEARNING OUTCOMES:

1. Find the natural domain and range of the given function.
2. Compute the value of the function at the indicated value of  $x$ .
3. Know the classification of the functions, their basic properties and graphs.
4. Classify a function as even, odd, or neither.
5. Find the composite of two functions, and express a function as the composition of two or more functions.
6. Sketch the graphs of the functions using concepts of reflections and translations, intercepts.
7. Use vertical line test to identify whether the given graph is the graph of a function.
8. Find the limit of a function, using graph, table of values, or algebra. Find limits involving infinity.
9. Determine whether the given function is continuous or not, find and describe all points of discontinuity.
10. Know the Intermediate Value Theorem.
11. Use the definition of the derivative to differentiate a function. Understand graphical and physical meanings of the derivative.
12. Find whether the function is differentiable or not.
13. Use the techniques of differentiation, including the chain rule, to find first and higher derivatives of algebraic, trigonometric, inverse functions, exponential, and logarithmic functions.
14. Find the equation of the line tangent to the graph of a function at the specified point.
15. Solve the word problems on rate of change of the function.
16. Find the derivative of a function by implicit differentiation; apply it to related rate problems.
17. Find the derivative of a function by logarithmic differentiation.
18. Find the differential of a function. Find the linear approximation of a function.
19. Identify which of the given curves represents a function and which represents its first and second derivative. Sketch the graph of the derivative of a function defined by the graph.
20. Know the Mean Value and Rolle's Theorem.
21. Use the first and second derivatives to find the shape of a graph, show where the function is increasing/decreasing, concave up/concave down; find the inflection points. Use the First and Second Derivative Tests to find relative extrema.
22. Sketch the graph of a function (show all critical points, inflections, asymptotes, etc.)
23. Find the absolute maximum and absolute minimum of a function on a given interval.
24. Solve optimization problems.
25. Find antiderivatives.
26. Know the definition of a definite integral, area and distance problems that lead to the definite integral.
27. Know the Fundamental Theorem of Calculus; recognize the differentiation and integration as two inverse processes.
28. Perform the indefinite and definite integration using basic integration rules, substitution method.
29. Find the average value of a function on a given interval.
30. Solve problems on applications of integration to geometry, physics, and engineering.

**COMMUNICATION:** All communication will occur by email (kmolkenthin@trcc.commnet.edu). Please make sure that you check your TRCC email or set it up to forward to another account. Check your email regularly to be informed of any changes in schedule.

**CLASS CANCELLATION:** If school is cancelled, notification of cancellation due to inclement weather will be available by telephone by 6:00 am for daytime classes and by 2:30 pm for evening classes by calling the College's main telephone at (860) 215-9000, pressing 1, and listening to the taped announcement. The College's website will also have announcements available by accessing the [www.threerivers.edu](http://www.threerivers.edu) home page. The myCommnet Alert Notification System will also be used to deliver important information regarding weather-related class cancellations, via both email messages and text messages, to registered individuals. To register, log on to your myCommnet account at <http://my.commnet.edu/> and follow the link to myCommnet Alert. Please: DO NOT email or call instructor regarding weather delays/closings.

If class is cancelled by the instructor, a notice will be placed on the classroom door. If time permits, students may be notified by a message via email.

\*\*For DELAYED college opening or EARLY college closing: If there is 45 minutes or more of class time from the start of a delayed opening or from the start of class until an early closing, we WILL still have class.

**WITHDRAWAL POLICY:** You may withdraw from this class any time up to and including **November 5** and you will receive a W grade on your transcript. However, you must complete a withdrawal form in the Registrar's Office at the time of withdrawal; *if you merely stop attending classes you will be assigned a grade of F or UF*. Any eligibility for refund of tuition is based on the date that the registrar receives the withdrawal.

**INCOMPLETES:** Incompletes will be given in *extreme* situations (to be determined by the instructor) and ONLY if most of the course work has been completed (*at least 80%*).

**ACADEMIC INTEGRITY:** The effective operation of any organization is dependent on the honesty and goodwill of its members. In an organization devoted to the pursuit of knowledge, acting with integrity is essential to effective teaching and learning. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. To emphasize the importance of academic integrity, Three Rivers Community College adheres to the Student Code of Conduct and Discipline Policy, as provided by the Connecticut State Colleges and Universities (CSCU) - Board of Regents for Higher Education. (Please refer to BlackBoard for the complete statement.)

**Some** of the behaviors that will be considered cheating are:

- Communicating with another student during a quiz or exam
- Copying material from another student during a quiz or exam or from any assignment being graded
- Allowing another student to copy from your quiz, exam, or any assignment being graded
- Use of unauthorized assistance on any assignment being graded
- Use of unauthorized notes or books during a quiz or exam
- Providing or receiving a copy of a quiz or exam used in the course
- Use of a cell phone or pager to transmit information during a quiz or exam

All cases of academic dishonesty will be referred to the Academic Dean. Do not let yourself come under the suspicion of academic dishonesty.

**CLASSROOM ETIQUETTE:** Good manners and classroom etiquette should be common sense for most students. Occasionally there are students who seem unaware or oblivious to proper classroom etiquette. What is etiquette? It's a code of conduct, a method for dealing with how people interact with each other – based on respect and accepted norms of behavior.

1. Arrive to Class on Time.

Regularly arriving late to class signals a level of disrespect -- whether you mean to send that signal or not. If you have problems getting to class on time, find a way to solve them. And on those rare days when you do arrive late, remember to enter the room quietly.

2. Turn Off Your Cell Phone.

Unless you are expecting an important call or text (for which you will notify the instructor ahead of time), the proper thing to do is turn your cell phone completely off, or at least the volume off, as soon as you enter class and properly place it completely inside a pocket or bag. Also, remove any ear buds/headphones and place in a pocket or bag prior to the start of the class.

3. Do Not Bring Food or Drink to Class

Do not eat or drink in class, **unless you are willing and able to clean up after yourself**. In many classrooms food is not allowed, so be sure to check for signage.

4. Avoid Side Conversations.

It is rude for students have a "private" conversation loudly enough that it's distracting to the instructor or other students in the classroom. If you have big news to share with your friends, do so before or after class -- but refrain from doing so during class. Besides being more respectful to the students and professor, you'll actually learn more information by being actively involved in the class rather than in your own side conversation.

5. Be Attentive in Class.

If you are going to make the effort to arrive on time and be in class, you should also make the effort to stay actively engaged in class. Avoid reading magazines, textbooks, completing any homework or computer use during class time. Flaunting your boredom or disinterest in the class is rude and inappropriate. Finally, please avoid falling asleep in class.

6. Stay for the Entire Class.

There may be times when you need to leave class early, but do not make a habit of doing so. If you do need to leave class early, you must alert the professor ahead of time and then discretely leave the classroom so as not to disturb the other students. If you do need to leave early, pick a seat close to the door to make a quick and quiet exit.

7. Avoid Signaling, Sending Signs That Class Time is Up.

Occasionally students attempt to signal that class is over by shutting their books loudly, unzipping and zipping their backpacks, and otherwise making noises indicating that class time is complete. Some students actually get up and walk out of class. I assure you I know how to tell time. If you have a professor that seems to have a problem with ending class on time, chat with him or her outside of class.

8. Contact the Professor When You Have to Miss Class.

When you have to miss class for legitimate reasons or when you miss class because of illness, contact the professor before the class meeting and inform him/her of your absence. You then need to obtain copies of lecture notes for *another student*. Do not, however, ask the professor in class to go over or re-lecture material you missed (for whatever reasons). And when alerting the professor a missed a class, do not ask the awful question, "are we doing (or did we do) anything important in the class I am missing/missed?"

9. Avoid strong odors

Too much perfume, cigarette odor or other strong odors, including foods odors, can be distracting or even nauseating to students and instructors, especially those with allergies or migraine issues. Please avoid bringing strong odors into the classroom.

**CELL PHONE POLICY:** All cell phones must be turned OFF or MUTED before entering the classroom and properly placed in a bag or pocket (not left on a desk). Cell phone use in class inappropriate and will not be tolerated. Students found using cell phones in any way in class will lose their attendance points for that class period. Cell phones may NOT be used for calculators during exams. All cell phones must be completely out of sight for all tests/exams. Any visible cell phone during an exam will result in a 0 for that exam – no exceptions.

**SCHOOL POLICIES:** Please refer to BlackBoard or the TRCC website for a link to the entire policy.

- **DIGICATION:** All students are required to maintain an electronic portfolio using the College template within Digication. Digication can be accessed at <https://threerivers.digication.com>.
- **DISABILITIES:** Three Rivers Community College (TRCC) is committed to the goal of achieving equal educational opportunity and full participation for individuals with disabilities. To this end, TRCC seeks to ensure that no qualified person is excluded from participation in, is denied the benefit of, or otherwise is subjected to discrimination in any of its programs, services, or activities.
- **NON-DISCRIMINATION:** Three Rivers Community College does not discriminate on the basis of race, color, religious creed, age, sex, national origin, marital status, ancestry, present or past history of mental disorder, learning disability or physical disability, sexual orientation, gender identity and expression, or genetic information in its programs and activities.
- **SEXUAL MISCONDUCT:** The Board of Regents for Higher Education (BOR) in conjunction with the Connecticut State Colleges and Universities (CSCU) is committed to ensuring that each member of every BOR governed college and university community has the opportunity to participate fully in the process of education free from acts of sexual misconduct, intimate partner violence and stalking.

**ACCEPTANCE POLICY:** After reading this syllabus, choosing to stay registered for this course exemplifies your acceptance of the syllabus and all policies and consequences outlined in the syllabus. If you do not agree with any of the terms in the syllabus, you are free to withdraw.

**\*\*The key to success in this course is to attend every class and do all the homework when it is assigned. Ask questions when you have them, either in class or in my office. You will find it much easier to learn the new topics if you consistently keep up with the course material and homework problems!\*\***


**\*\*\*The instructor has the right to change/modify this syllabus at any time with proper notification to the class\*\*\***

<u>Week of:</u>	<u>Chapter(s):</u>	<u>Topics Covered:</u>
8/28		Wednesday - Class introduction, Review
9/2	2.1, 2.2	<b>NO CLASSES MONDAY 9/2 – Happy Labor Day!</b> The Tangent and Velocity Problems, The Limit of a Function ♦ <b>Quiz #1 – Wednesday 9/4</b>
9/9	2.3 - 2.5	Calculating Limits Using Limit Laws, The Precise Definition of a Limit, Continuity ♦ <b>Quiz #2 – Wednesday 9/11</b>
9/16	2.6, 2.7	Limits at Infinity; Horizontal Asymptotes, Derivatives and Rates of Change ♦ <b>Quiz #3 – Wednesday 9/18</b>
9/23	2.8, 3.1	Derivative as a Function, Review, Derivatives of Polynomials and Exponential Functions ♦ <b>Quiz #4 – Wednesday 9/25</b>
9/30	3.2	The Product and Quotient Rules ♦ <b>Exam #1 – Wednesday 10/2</b>
10/7	3.3 – 3.6	Derivatives of Trigonometric Functions, The Chain Rule, Implicit Differentiation, Derivatives of Logarithmic Functions ♦ <b>Quiz #5 – Wednesday 10/9</b>
10/14	3.7 - 3.10	Rates of Change in the Natural and Social Sciences, Exponential Growth and Decay, Related Rates, Linear Approximations and Differentials ♦ <b>Quiz #6 – Wednesday 10/16</b>
10/21	4.1 - 4.3	Maximum and Minimum Values, The Mean Value Theorem, How Derivatives Affect the Shape of a Graph ♦ <b>Quiz #7 – Wednesday 10/23</b>
10/28	4.4, 4.5	Indeterminate Forms and l'Hospital's Rule, Summary of Curve Sketching ♦ <b>Quiz #8 – Wednesday 10/30</b>
11/4	4.7 - 4.9	Optimization Problems, Newton's Method, Antiderivatives ♦ <b>Exam #2 – Wednesday 11/6</b>
11/11	5.1 – 5.3	Areas and Distances, The Definite Integral, The Fundamental Theorem of Calculus ♦ <b>Quiz #9 – Wednesday 11/13</b>
11/18	5.4, 5.5	Indefinite Integrals, The Substitution Rule ♦ <b>Quiz #10 – Wednesday 11/20</b>
11/25	6.1	Areas Between Curves ♦ <b>Quiz #11 – Monday 11/25</b> <b>NO CLASSES WEDNESDAY 11/27 – Happy Thanksgiving!</b>
12/2	Catch-Up, review	♦ <b>Exam #3 – Wednesday 12/4</b>
12/9		♦ <b>Quiz #12 – Monday 12/9</b> ♦ <b>Final Exam – Wednesday 12/11</b>



## GRADE TALLY:

	Value	Points Earned
Quiz #1	20	
Quiz #2	20	
Quiz #3	20	
Quiz #4	20	
Quiz #5	20	
Quiz #6	20	
Quiz #7	20	
Quiz #8	20	
Quiz #9	20	
Quiz #10	20	
Quiz #11	20	
Quiz #12	20	
Exam #1	100	
Exam #2	100	
Exam #3	100	
Final Exam	200	Contact instructor for points earned
Attendance & Participation	50	Contact instructor for points earned



Only count top 10 scores –  
total : 200 points