Math 1190.700: Business Calculus

Instructor Information

Name: Rumana Akther
Pronouns: she/her/hers
Office Location: GAB 468
Tutoring/Office Hours: Tuesdays and Thursdays from 3:30 pm to 4:30 pm | SAGE 120A (TSI Math Lab)

Fridays from 10:00 am to 11:00 am | GAB 468---others by appointment!

You are always welcome to attend tutoring hours to get your questions answered.
Email: Rumana.akther@unt.edu.
Communication Expectations: The primary tools for communication will be **Canvas Inbox**. Please send all personal concerns, questions, or appointment requests through one of these channels. I typically respond to emails within one (1) business day during regular business hours (8:00 a.m.–5:00 p.m., Monday–Friday). Messages received after business hours are considered received the next business day. While I may occasionally reply late at night or on weekends, you should not expect quick responses outside of business hours.

Course Description

Differential and integral calculus with emphasis on applications to business.

Course Structure

This course takes place 100% online in Canvas. Information on how to be successful in a remote learning environment can be found at UNT Online (https://online.unt.edu/learn). This course is an 8-week course structured with 8 modules. Each module has multiple lessons with assignments and assessments due that week. This course includes the same content as a 16-week course; expect to spend at least twice as much time each week as you would in a 16-week course.

Course Prerequisites or Other Restrictions

Prerequisite(s): Two years of high school algebra and consent of department; or MATH 1100 or MATH 1180 with a grade of C or better.

Course Learning Objectives

Upon successful completion of this course, students will:

1. Apply calculus to solve business, economics, and social sciences problems.

2. Apply appropriate differentiation techniques to obtain derivatives of various functions, including logarithmic and exponential functions.

3. Solve optimization problems with emphasis on business and social sciences applications.

4. Determine appropriate technique(s) of integration.

5. Integrate functions using the method of integration by parts or substitution, as appropriate.

6. Solve business, economics, and social sciences applications problems using integration techniques.

ADA Policy

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website at https://studentaffairs.unt.edu/office-disability-access. You may also contact ODA by phone at (940) 565-4323.

Materials

Homework assignments will require accessing Knewton or Canvas "quizzes" through your UNT Canvas account. Log in to Canvas at https://unt.instructure.com, read through "Getting started with Knewton". Additional resources are listed in Canvas. You will have to purchase access to Knewton or continue access if you have used it for Math 1180 or 1190 and purchased the 2-year access within the last two years. This can be done through the Barnes and Noble link or other sellers. You can get free access for up to two weeks. For more information about your homework, please read the Homework section.

No textbook is required.

Course Technology & Skills

This course has digital components. To fully participate in this class, students will need internet access to reference content on the Canvas Learning Management System.

Minimum Technology Requirements and required skills

- A working computer with speakers and webcam that can reliably access the internet and access Canvas (minimum requirements) and view content videos on Canvas or Youtube
- A calculator (see Calculator Policy)
- Ability to download, install and run software including Respondus Lockdown Browser
- Proficiency in using Canvas
- Proficiency in using Knewton (see Getting Started with Knewton in Canvas)
- Proficiency in using your calculator

Information on how to be successful in a digital learning environment can be found at Learn Anywhere (https://online.unt.edu/learn).

Calculator Policy

Many calculators will be sufficient for the exams in this class. Among good options are the TI-36X, TI-30XIIS, TI-83 or TI-84 (or similar Casio, other manufacturer's calculators). Examples of calculators not allowed: TI-Nspires, TI 92's, TI 89's. Any other utility with alphanumeric/CAS capabilities or the ability to connect to the internet, such as a smartphone.

Knewton is Required

The homework and some course content will be delivered in Knewton, which must be accessed via Canvas. You **will not** need a Knerd link as access is provided directly in Canvas. Note: Mac users may find it easiest to use a browser other than Safari.

Course Evaluation

Homework	21%
Engagement	10%
Midterm Exams	49% total (Average of all exams)
Final Exam	20%

Grade Assignment:

A: [90%,); B: [80%, 90%); C: [70%, 80%); D: [60%, 70%); F: [0%, 60%).

Policies/information directly affecting grades/grading

Homework:

The online homework is worth 21 % of your overall course grade. Each assignment is equally weighted. Most homework will use an online software program called Knewton, though some will be directly in Canvas.

What is Knewton? Knewton is a mastery-based adaptive software and is designed to judge your ability to complete your assignments. You will be able to proceed through Knewton much more quickly if you study and review your notes before starting the assignments. For best results, read through “Getting Started with Knewton" located in Canvas before your first assignment.

Why do Homework? A purpose of homework is to provide you with sufficient opportunities to learn and practice the new content you are learning. Knewton is adaptive and mastery based, which means that the software will provide each student with the sufficient number of questions to judge whether each topics learning objectives have been mastered. This means a student who has prepared well before the assignment may have very short assignments, while a less well-prepared student may take many more questions on each assignment. Again, the more you prepare before starting to attempt the exercises, the less work you will have. For more tips on how to get the most out of the homework assignments, read through “Getting Started with Knewton"

Get the Most out of Homework

- You should have a dedicated notebook for your math homework. Carefully write out your work, especially noting the questions with which you struggled. This should form a substantial part of your review material prior to the exams.
- Homework is one piece of your learning process in this course, but successful completion of the homework assignments is not sufficient preparation for exams. You must be able to do the exercises on your own, without any aid on exams.

Where is Knewton?

You access your Knewton powered homework in one of two ways through Canvas, they are:

1. At the Syllabus portal. Every assignment for your course is accessible through the Syllabus portal. This portal is very helpful because it lists all assignments in due date order; or

2. At the content module. Select the Modules tab along the left-hand navigation of Canvas. From the Modules select Unit 1. The Knewton assignments have a paper and pencil icon to their left.

When are Knewton Homework Assignments due?

Assignment due dates are listed on the calendar and on the syllabus link in Canvas. Knewton assignments are always due at 11:59 PM. To successfully complete the assignments, you must carefully manage your time. I recommend that you plan to complete them well ahead of the due date. Late homework will not be accepted. At the end of the term, two (2) lowest grades will be dropped from the calculation of the homework average. In Canvas, the two dropped grades will not be correctly calculated until the very end of the semester.

Midterm Exams

Exam Structure

The weekly exams will vary in length. The exams will consist of different question types including multiple-choice, numeric and/or symbolic inputs, as well as detailed “work-out” responses.

You are permitted to use a pen or pencil, blank sheets of paper, and an approved calculator during the exam. I will provide you with a list of formulas and/or rules, if any, that will be included in your exams.

Exam Content and Dates

There will be seven weekly exams covering the content in the course. Each midterm exam is worth 7% of your overall grade for 49% of the overall grade. The exams will vary in length and will be made up of different types of questions including multiple choice, numeric input, and write out your answers.

On certain problems, I typically provide a formula sheet in face-to-face classes. On all of the possibly relevant problems, I will include the formula sheet within the exam. You will not be allowed to include a formula sheet when taking your exams. All you can use are writing implements (e.g. pencil), blank sheets of scratch paper and an approved calculator.

Final Exam:

The final exam date is in the calendar at the very end of the syllabus. The final exam is comprehensive and is worth at least 20% of the course grade. For a full list of Final Exam dates and time see this Link. The format of the final exam will be the same as the format of the midterm exams, except longer.

Examination Policy

I structure my course to balance the time necessary for students to learn the necessary content, with the need to have regular midterm exams. As such, students are expected to take the exams on the given day or early. In the event of a schedule conflict with a university function, dental/physician's appointment, wedding, formal, etc., the student should make every effort to take the test early. In the event that an unavoidable conflict/illness comes up, reach out to me as soon as you can. If a student does not take a scheduled exam, a zero may be recorded for that exam. If your final exam score is higher than one or two of your weekly exam scores, then the lowest one or two weekly exam grade(s) will be replaced with final exam grade. If you receive a zero for academic dishonesty on an exam, the final exam score will NOT replace that zero.

Engagement tasks consist of a variety of assignments, including introduction/ orientation assignments and discussion posts. The discussion assignments are designed to keep you connected with your classmates. This graded portion of your course is worth 10% of the grade overall.

Assignment Policy

All homework assignments are due online through Canvas either directly in Canvas or via Knewton.

Late Work

Due dates are expected to be followed and are intended to allow you time to complete the course on time. As such, I will rarely accept late work. If exceptional circumstances occur, please reach out to me as soon as possible.

Instructor Responsibilities and Feedback

My goal in this course is to provide an environment conducive to your learning. I will work hard to be available outside of class during my tutoring/office hours, via email or via Zoom. I welcome questions about any portion of the course and am happy to clarify any issues if they come up. Most homework assignments are automatically graded, and you can review your work on the Canvas assignments the day after they are due. I make it a priority

to grade exams quickly, but my experience suggests that this can take me up to two weeks to get them back to you.

Drop/Withdrawal Policy

If the student is unable to complete this course, it is his/her responsibility to formally withdraw from the course. You can find more details about dropping the course at this link.

If the student does not properly withdraw from the course but stops attending, the student will receive a performance grade, usually an F.

If you are considering dropping, it is strongly recommended that you discuss the matter with me as soon as possible.

Incomplete

Beginning Nov. 23rd, a student that qualifies may request a grade of "I", incomplete. An "I" is a non-punitive grade given only if ALL three of the following criteria are satisfied. They are:

- The student is passing the course.
- The student has a justifiable (and verifiable) reason why the work cannot be completed as scheduled; and
- The student arranges with the instructor to complete the work within one academic year.

Syllabus Change Policy

This syllabus is subject to change. Any changes will be announced, and the updated syllabus will be posted in Canvas.

Attendance and Participation

Research has shown that students who attend class are more likely to be successful. You should attend every class and participate fully unless you have a university excused absence such as active military service, a religious holy day, or an official university function as stated in the Student Attendance and Authorized Absences Policy (PDF). If you cannot attend a class due to an emergency, please let me know. Your safety and well-being are important to me. Even if you are unable to attend, students are responsible for all information given in class.

Classroom Etiquette:

Appropriate behavior is expected of all students taking this course. Arrive to class promptly and do not leave until the scheduled ending time of the class. If you arrive late or leave early, please do so as discreetly as possible and take a seat near the door. Turn off all non-medical electronic devices such as pagers, cell phones, laptops, etc. Take off your headphones. Do not play on your phone or work on unrelated assignments during class. I reserve the right to ask disruptive students (texters, those using a computer for non-class related work, etc.) to leave class. You will be considered absent if you are asked to leave. Again, it is considered a serious violation of your responsibilities as a student to be on a computer or your mobile device during class. It distracts you, lowers your performance in class and does the same for those around you. Please read the New Yorker article I've posted on Canvas for more information about this. Students misusing electronic devices for non-academic reasons distract others and may be asked to leave. See also #8 on the 10 academic rights that is linked here.

Recommended Steps to Succeed

I hope this advice will be helpful for you. It consists of my observations in the time I have been teaching. I have observed two-character traits common to successful students. The traits are maturity and time commitment. Learning requires working when you don't want to – that requires maturity. Learning also requires consistent and diligent dedication of time.

Some additional specific steps:

- Learning math requires a great deal of time and honest effort along with regular and consistent work.
- After class review your notes. If you have questions, ask immediately.
- Actively read through all recommended readings.
- Use the time you spend on your Knewton assignments to learn the material rather than just getting through the homework as fast as possible.
- Complete the Exam Reviews prior to each exam.
- Form a study group with your classmates. Create online groups.
- Make use of the tutoring options available to you: the Math Lab, the Learning Center, and your instructor's tutoring hours.
- The Learning Center offers several tutoring options: Drop-In Tutoring, One-on-One Tutoring, Group Tutoring and Online Tutoring. Additional links for places you can get help at UNT is on the Academic Support and Student Services page in the Canvas Start Here module.
- Work on the assignments consistently well ahead of due date. Waiting until the last minute is a horrible idea.
- Math is not a spectator sport. You must try the problems, finish problems, ask questions, correct your mistakes, put concepts in your own words, and practice, practice, practice. You learn math by doing, not by watching others do math.
- Contact your instructor immediately if you are having problems.

One last thought: As an adult, you need to **self-advocate**. If you are having problems, you are expected to seek help. Most of you, at some point in your college career you will run into problems and need to ask for help – don't wait, reach out as soon as you realize you have an issue.

Supporting Your Success and Creating an Inclusive Learning Environment

Every student in this class should have the right to learn and engage within an environment of respect and courtesy from others. We will discuss our classroom's habits of engagement and I also encourage you to review UNT's student code of conduct so that we can all start with the same baseline civility understanding (Code of Student Conduct).

Summary of key dates: Review of the registrar's Academic Calendar & Key Dates

Academic Integrity Policy

Cheating on tests, quizzes or final exams is a serious breach of academic standards and will be punished severely and generally result in a student failing the course. All work done on exams and quizzes must represent only the student's own work, unless otherwise stated in the directions. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. See Academic Integrity for details on academic integrity policies at UNT.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation Federal regulations state that students may apply only 3 fully-online semester credit hours (SCH) to the hours required for full-time status for F-1 Visa (PDF) holders. Full-time status for F-1 Visa students is 12 hours for undergraduates and 9 hours for graduate students.

Tentative Weekly Calendar for 8wk2

Week 1

Monday 3/16/2026 Introduction to class: Completely review Start Here Module and Syllabus review

Tuesday 3/17/2026 Section 1.0: Rational Inequalities: Sign charts and factoring,1.1: Idea of a Limit and Limit Rules

Wednesday 3/18/2026 1.2: Limit Rules Knewton Due: 1.0,1.1

Thursday 3/19/2026 1.3: Continuity Knewton Due: 1.2,1.3

Friday 3/20/2026 1.4: Limits at Infinity and Infinite limits Knewton Due: 1.4 Due in Canvas: Exam 1 Wrapup

Week 2

Monday 3/23/2026 Due in Canvas: Exam 1

Tuesday 3/24/2026 1.5: Average Rate of Change and Tangent Lines by Graphing

Wednesday 3/25/2026 1.6: Definition of the derivative Knewton Due: 1.5 p1, 1.5 p2

Thursday 3/26/2026 2.1: Constant, Power, Sum and Difference Rules Knewton Due: 1.6

Friday 3/27/2026 Prepare for Exam 2 Knewton Due: 2.1 Due in Canvas: Exam 2 Wrapup

Week 3

Monday 3/30/2026 Due in Canvas: Exam 2

Tuesday 3/31/2026 2.2: Product and Quotient Rules

Wednesday 4/1/2026 2.3: Chain Rule Knewton Due: 2.2

Thursday 4/2/2026 2.4: Derivatives of Exponential and Logarithmic Functions Knewton Due: 2.3 p1, 2.3 p2

Friday 4/3/2026 Prepare for Exam 3 Due in Canvas: 2.4, Exam 3 Wrapup

Week 4

Monday 4/6/2026 Due in Canvas: Exam 3

Tuesday 4/7/2026 3.1: Marginal Applications to Business

Wednesday 4/8/2026 3.2: Elasticity of Demand Knewton Due: 3.1

Thursday 4/9/2026 3.3: First Derivative Test and Graphing Knewton Due: 3.2

Friday 4/10/2026 Prepare for Exam 4 Knewton Due: 3.3 p1, 3.3 p2 Due in Canvas: Exam 4 Wrapup

Week 5

Monday 4/13/2026 Due in Canvas: Exam 4

Tuesday 4/14/2026 3.4: The Second Derivative

Wednesday 4/15/2026 3.5: Absolute Extrema Knewton Due: 3.4

Thursday 4/16/2026 3.6: Optimization Knewton Due: 3.5

Friday 4/17/2026 Prepare for Exam 5 Knewton Due: 3.6 Due in Canvas: Exam 5 Wrapup

Week 6

Monday 4/20/2026 Due in Canvas: Exam 5

Tuesday 4/21/2026 4.1: Antiderivatives

Wednesday 4/22/2026 4.2: Integration by Substitution Knewton Due: 4.1

Thursday 4/23/2026 4.3: The Area Question Knewton Due: 4.2

Friday 4/24/2026 Prepare for Exam 6 Knewton Due: 4.3 Due in Canvas: Exam 6 Wrapup

Week 7

Monday 4/27/2026 Due in Canvas: Exam 6

Tuesday 4/28/2026 4.4: Definite Integrals and Rules for Definite Integrals

Wednesday 4/29/2026 4.5: Fundamental Theorem of Calculus Knewton Due: 4.4 p1, 4.4 p2

Thursday 4/30/2026 4.6: Area between Curves; Gini index Knewton Due: 4.5 p1, 4.5 p2

Friday 5/1/2026 Prepare for Exam 7 Knewton Due: 4.6 p1, 4.6 p2 Due in Canvas: Exam 7 Wrapup

Week 8

Monday 5/4/2026 Due in Canvas: Exam 7

Tuesday 5/5/2026 4.7: Applications of Integration

Wednesday 5/6/2026 Prepare for Final Exam Knewton Due: 4.7 p1, 4.7 p2

Thursday 5/7/2026 Due in Canvas: Final Exam

Your Final Exam is scheduled to be due on Monday, May 4th and the Final Exam schedule states that "**Final exams should be completed by noon on Thursday, May 7.**". It is required, comprehensive and worth at least 20% of your overall grade.