MATH-1005H-A: Applied Calculus
2019WI - Peterborough Campus

Instructor:

Instructor: Haile Gessesse

Email Address: hailegessesse@trentu.ca

Phone Number: 705-748-1011 x7925

Office: GCS 332

Office Hours: Wednesday 12:00-1:30pm, Thursday 12:00-1:30pm

Meeting Times:

Please see the undergrad academic timetable at https://www.trentu.ca/registrar/academic-timetable/undergraduate-timetable-0

Co-instructors and Teaching Assistants:

TBA

Department:

Academic Administrative Assistant: Colleen Berrigan

Email Address: math@trentu.ca

Phone Number: 7715

Office: SC327

Description:

This course covers the essentials of calculus of one variable and several variables. We will be

focused on the most important concepts and principles of calculus, and their applications. Basic skills of differentiation and integration, as well as the ability to solve application problems using calculus will be developed.

Learning Outcomes:

The course is developed to address several learning outcomes. By the end of the course a successful student should be able to:

1. Graph polynomial, rational, exponential and logarithmic functions
2. Compute limits of combinations of polynomial, rational, exponential and logarithmic functions
3. Find the derivatives of combinations of polynomial, rational, exponential and logarithmic functions
4. Sketch graphs using first and second derivative information of functions
5. Use the derivative to solve applied problems in the life Sciences and Economics involving rate of change and Optimization
6. Find integrals using basic techniques of integration
7. Use Integration to solve applied problems in the life Sciences and Economics
8. Find partial derivatives of a function of several variables
9. Use partial derivatives to solve extreme value problems from the life sciences and economics.

Texts:

Calculus with Applications, Brief Version (11th edition) by Margaret Lial, Raymond N. Greenwell and Nathan P. Ritchey

Assessments, Assignments and Tests:

1. Assignments (Seven equally weighted assignments, posted on Blackboard, each worth 5%, Only six best score to be counted).

Assignments will be posted on Blackboard. Solutions are to be submitted to the correct drop box labeled 'Haile Gessesse' before the due date. Drop boxes are located at room GCS 336. Be sure to double check that you are submitting to the correct drop box because assignments submitted to the wrong box (and late assignments) will be given a grade of 0. Late assignments will NOT be accepted. You may discuss the assignment problems with your classmates, but you are expected to write up your solutions independently. Copying assignment solutions and/or presenting someone else's work as your own is a serious academic offence and will be treated accordingly. See the ACADEMIC INTEGRITY section below for more information. All

unclaimed assignments must be kept in a secure place for 12 months.

The following are tentative due dates and time of assignments:

- Assignment 1 due on Friday, January 25, at 16:00
- Assignment 2 due on Friday, February 1, at 16:00
- Assignment 3 due on Friday, February 8, at 16:00
- Assignment 4 due on Friday, March 8, at 16:00
- Assignment 5 due on Friday, March 15, at 16:00
- Assignment 6 due on Friday, March 22, at 16:00
- Assignment 7 due on Tuesday, April 2, at 16:00

2. Midterm (A mix of show your work type questions and multiple choice questions, closed book exam covering the topics from week 1 to week 5, worth 30%)

- The midterm is to be taken on the 6th week in the regular classroom and class time.

3. Final Examination (A mix of show your work type questions and multiple choice questions, a 3 hour closed book comprehensive examination covering the entire course, worth 40%)

- The final exam is to be taken in the exam period as scheduled by the University.

Grading:

Assignment (30%), Midterm (30%), and Final (40%)

Schedule:

Week-by-Week Tentative Schedule: The schedule of topics is listed below. It is important that you attend class and use the Blackboard system regularly to remain informed about the material being covered.

1. Week 1 : Review: Algebra and Functions and Exponents.
2. Week 2 : Review of Exponential and Logarithmic Functions and introduce Limits
3. Week 3 : Continuity, Rates of change, Definition of a derivative, Graphical differentiation of polynomial, and exponential functions.
4. Week 4 : Basic rules for finding derivatives: the Power Rule, the Chain Rule, the Product Rule and the Quotient Rule.
5. Week 5 : Implicit differentiation and derivative of logarithms functions.
6. Week 6 : Increasing and decreasing functions, higher derivatives, concavity
7. Week 7 : Reading Week Break (No Classes)
8. Week 8 : Extremas, extrema problems and curve sketching

9. Week 9 : Related Rates
10. Week 10 : Antidifferentiation, Substitution
11. Week 11 : Integration by parts, Fundamental theorem of calculus,Area and the definite integral
12. Week 12 : Introduction of functions of several varials, Partial derivatives, Maximum and minimum values
13. Week 13 : Lagrange multipliers and Double integrals if time permitting

Course Guidelines:

1. Emails: You must use your Trent email to contact the Instructors. Emails from non-trentu.ca addresses (e.g. hotmail.com, gmail.com) will be ignored. The subject line of each email must contain [Math1005H].
2. Seminars will be used for asking questions, solving problems and tutorials.
3. Missed and late assignments will receive a grade of zero.
4. Missed midterms or final examinations without official medical approval, as mandated by the university, will receive grades of zero. No make-up midterms will be provided. In extenuating circumstances, talk to the instructor in advance to make arrangements or will be treated case by case

Departmental Policies:

Email Accounts

The Trent e-mail account is considered the official e-mail account and will be the only e-mail account used to communicate with students for academic and administrative purposes. Students are responsible for ensuring that they monitor and maintain their Trent e-mail account and to ensure that e-mail is accessed, read, and acted upon in a timely fashion. Students should be aware that e-mails from non-Trent accounts will not be considered official.

University Policies:

Academic Integrity

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from failure on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's *Academic Integrity Policy*. You have a responsibility to

educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more: www.trentu.ca/academicintegrity.

Access to Instruction

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and documentation from a regulated health care practitioner and feels that they may need accommodations to succeed in a course, the student should contact the Student Accessibility Services Office (SAS) at the respective campus as soon as possible.

Print