Math1551 - R01 (Lecture), Differential Calculus

Course prefix: MATH

Course number: 1551

Section: R01

CRN (you may add up to five):
90138

Instructor First Name: Hyun Jeong

Instructor Last Name: Kim

Semester: Fall

Academic year: 2025

Course description:

Differential calculus including applications and the underlying theory of limits for functions and sequences.

Course learning outcomes:

The primary goals of this course are to
1. explore fundamental concepts of single variable calculus
2. explore the solution of problems from a mathematical perspective, and to
3. help prepare students to succeed in upper level math, science, engineering and other courses that require calculus.

Learning objectives :

- **Construct** mathematical expressions and graphs involving functions and their derivatives.
- **Compute** mathematical quantities using differential calculus and **interpret** their meaning.
- **Analyze** mathematical statements and expressions (for example, to assess whether a particular statement is accurate).
- **Write** logical progressions of precise statements to justify and communicate mathematical reasoning.
- **Apply** calculus concepts to solve real-world problems such as optimization and related rates problems.

Some of the topics that are explored in this course include the following.

- Basic calculus concepts such as limits, derivatives, optimization.
- The graphing of functions using calculus.
- The use of differential calculus to solve physics, geometry, and optimization problems.

Required course materials:

Calculus: Early Transcendentals, 14th ed*.* by G. B. Thomas Jr. Pearson. ISBN 978-1292253220. Select topics from chapter 1, 2, 3, and 4 will be covered.

If you already have a Pearson access code, you can find the online book. But you don't need to buy it if you don't have one. Course slides with all the lessons will be posted on Canvas.

Grading policy:

HOMEWORK: Homework will be assigned on-line every week via **Webwork**. Each homework will be due on **Tuesdays** at 11:59 PM (except during class recesses or as announced otherwise in class) *at which time the solutions will also become available*.

QUIZZES: There will be five quizzes of 20 minutes on Wednesdays. Tentative dates are Aug 27, Sep 10, Oct 8, Oct 22 and Nov 26. **One** lowest quiz score will be dropped.

MIDTERMS: There will be two midterms of 50 minutes. Tentative dates are Sep 24 (Wednesday) and Nov 14 (Friday). There's no dropping for midterm.

Important : The dates for all the exams are already published. Please do not make any plan for travel for these dates as no make-up or earlier tests will be allowed! Missing test will be marked as 0.

FINAL EXAM: The final exam will cover all course materials and will be administered during the final exam period (the exact date will be announced later.) for 2 hours and 50 minutes. All students must take the final examination and should not plan for travel during the final exam period before all the exam dates are fixed. No earlier or late exam will be allowed for travel plans.

Grades

Final grades will be calculated using whichever of the following weights yields the higher grade.

Assessment	Weight 1	Weight 2
Participation	2% (possible 0.5pt bonus)	2% (possible 0.5pt bonus)
Webwork Homework	10% (possible 0.5pt bonus)	10% (possible 0.5pt bonus)
4 best Quizzes	20%	20%
2 Midterms (Better midterm 65% + The other 35%)	30%	38%
Final Exam	38%	30%

CIOS Bonus: When the participation to the survey for both Lecture and Studio is above 85%, there will be 1pt bonus awarded to the entire class. (Total 2 points, out of 100, bonus in the final grade is possible.)

A **midterm grade** will be assigned around **September 30**. A satisfactory grade will be assigned to all students with a midterm average of 70% or higher.

Letter grades will be determined based on the usual intervals. **A**: 90% and higher, **B**: [80%, 90%), **C**: [70%, 80%), **D**: [60%, 70%), **F**: [0%, 60%). For example, a final grade of 89.99% is converted into a B, a final grade of 79.99% is converted into a C, and so on. There will be NO changes to these intervals because there will be an appropriate curve or make-up test depending on the average for each test. No individual curve, extra credits, or make-up exam (except for justified absences.)

Attendance policy:

PARTICIPATION: Attending class is important. Class attendance and participation for both lectures and studios will be recorded and scored on a 0-2.5 scale. The scale is determined as follows: 2.5 points for above 90% attendance for both Lecture and Studio, 2 points for above 80% attendance for both Lecture and Studio, and 1 point for above 80% in one and 80-60% in the other, and 0 otherwise. The participation grade will be added onto the final average with a possible 0.5 bonus at the end of the term, affecting all borderline grades. Late arrivals and early departure will be also noted.

Academic honesty/integrity statement:

Students are expected to maintain the highest standards of academic integrity. All work submitted must be original and properly cited. Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.

Core IMPACTS statement(s) (if applicable):

This is a Core IMPACTS course that is part of the STEM area

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:

- How do I ask scientific questions or use data, mathematics or technology to understand the universe?

Completion of this course should enable students to meet the following Learning Outcomes:

- Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Inquiry and Analysis
- Problem-Solving
- Teamwork