MAFE203IU- ANALYSIS 3, FALL 2020

Welcome to "Analysis 3" in Fall 2020!

Lecturer: Dr. Nguyen Minh Quan. Office: A2.610
Office Hours: Mon: 9 AM-10 AM, Friday: 2 PM-3 PM, and/or by appointments.
Email: quannm@hcmiu.edu.vn
Homepage: http://math.hcmiu.edu.vn/user/nmquan/

Lectures: Friday, 8 AM-10:20 pm in A1.207A

Teaching Assistant:
Mr. Nguyen Hung Quang Khai. Email: quangkhaiolympic@gmail.com

Textbook (main): J. Stewart, *Calculus*, *7*Ed., Brooks/Cole, 2012. (Chapters 14, 15, 16)

Number of credits: 3

Prerequisite: Analysis 1, 2.

Main Contents: Functions of Several Variables: Limits, Continuity, Partial Derivatives; Maximum, Minimum, and Optimizations; Lagrange multiplier; Multiple Integrals: Double Integrals, Triple Integrals, Techniques of Integration; Vector Fields; Line Integrals; Surface Integrals; Curl and Divergence.

Learning outcomes:

Upon the successful completion of this course students will be able to:

1. to master the basic concepts, theories, and methodologies of calculus of functions of several variables concerning partial derivatives and multiple integrals
2. to build the mathematical models of functions of multi-variables from real problems such as optimization problems
3. to solve the practical models/problems/exercises in multivariate calculus taken from many areas of engineering, finance, business and the applied sciences, then to analyze the results and deduce conclusions

Assessments: Your final grade will be determined by averaging your grades for exams and assignments with the following weightings:

Assignments/Quizzes/HW and class attendances: 20%,
Midterm Test: 30%,
Final Exam: 50%.

Important Info:

- **What can be used in Midterm and Final examination?** Each student is allowed ***one A4-sheet of reference material***. Scientific calculators are allowed, but other electronic devices (like computers, phones, etc) are NOT allowed.

- There are tentatively **4 Homework Assignments, and about 8 in-class-quizzes.** Your grade on "**HW Assignments/Quizzes"** is the average score of 8 quizzes (with any bonus for class participants) and the 4 homework assignments. Half of the quizzes are given randomly. In general, late homework will not be accepted.
- HW, lectures and announcements will be posted on IU Blackboard.
- **Bonus credits in class:** Bonus points will be given for students who make good questions, answer the questions from the lecturers or solve the problems/questions on the board when suggested/requested.
- **Assignments:** Collaboration and discussion between students is strongly encouraged, but you **must** write your own solutions and understand them. Show all your work; **how you arrive at your answer more important than the finally numeric answer**. Duplication of homework solutions prepared in whole or in part by someone else is **not** permitted. **Late submissions** for HW Assignments will be penalty a deduction of 10% for each day of lateness.

Attendance: I expect you to attend classes regularly unless you have a valid excuse. Please remember that once you miss classes and fall behind, it is very difficult to get back on track.

Classroom Conduct:
Cell phones must be off or set to silent mode in the classroom. Leave the class to conduct your emergency conversation. Remove any headphones once class sessions begin. Use smartphones, laptops appropriately, for course-related purposes only. Do not engage in side conversations. Surfing the Web, doing homework, checking email/Facebook, texting on smartphones, phone/PC alerts during lectures are rude and disrespectful.

Workload: You are expected to spend about 3-5 hours of work per week outside of class. Some of you will do well with less time than this, and some of you will need more.

Tips for success: Active in learning, self-motivation, self-study, read/review the material before the class, do in-class quizzes and homework assignments seriously, teamwork (allowed to discuss on assignments and quizzes), meet instructor in his office hours, speak up and raise questions, improve your problem-solving skills: make appropriate questions and find the answers to these questions.

Tentative Schedule

Sep. 11	Functions of Several Variables, Limits and Continuity
Sep. 18	Partial Derivatives, the Chain Rule
Sep. 25	Approximations and total Differentials. Exercises.
Oct. 2	Directional Derivatives and Gradient
Oct. 9	Applications. Min/Max. Optimization. **HW1 due**
Oct. 16	Double Integrals
Oct. 23	Double Integrals (cont.)
Oct. 30	Change of Variables in Double Integrals. Exercises. **HW2 due**
Nov. 2-14	**Midterm Examination**

Nov.20	Multiple Integrals (1)
Nov. 27	Multiple Integrals (2)
Dec. 4	Applications of Integrals in Economics and Engineering. Exercises
Dec. 11	Vector Fields, Line Integrals. **HW3 due**
Dec. 18	Line Integrals of Vector Fields.
Dec. 25	Green's Theorem.
~~Jan 1~~	Happy New Year! **No class.** Make-up: To be determined. Curl, divergence. Exercises.
Jan. 4-9, 2021	Reservation week. **HW4 due**
Jan 11-23, 2021	**Final Examination weeks**

-THE END-