MAT 2322 B Calculus III for Engineers Fall 2011

Professor: Catalin Rada
Office: B07-B KED (585 King Edward) Tel. 562-5800 ext. 2029
e-mail: catalin.rada@alumni.uottawa.ca

Office Hours: MON 13:00 pm to 14:30 pm, or by appointment.

Lectures: Mondays 11:30 am to 1:00 pm, STE A0150

Thursdays 1:00 pm to 2:30 pm, STE A0150

Course webpage: On your Virtual Campus and *www.mathstat.uottawa.ca/c̃rada*292

Textbook:

Calculus, Concepts and Contexts, 4th ed, J. Stewart, Brooks/Cole (Required)

Prerequisites: (MAT 1322 or MAT1325 or MAT1332), and (MAT 1341 or CEGEP linear alge- bra). Cannot be combined for credit with MAT 2122 or MAT 2121.

Description:

Extrema of functions of several variables. Multiple integration and applications. Vector Fields and their derivatives. Curves. Vector differential operators. Line integrals. Surfaces and surface integrals. Theorems of Stokes, Gauss, etc. Contents: Extrema of functions of several variables. Multiple integration and applications. Vector Fields and their derivatives. Curves. Vector differential operators. Line integrals. Surfaces and surface integrals. Theorems of Stokes, Gauss, etc. We will cover chapters 9 to 13 of the textbook, some of which is review from MAT1322 (1332) and/or MAT1341.

Homework: There will be no homework to hand in; however, you will be given a list of problems from the textbook that you will be expected to solve at home. Some of these problems will have the answers at the back of the book. For some of the other problems, the professor will provide written solutions on the course webpage from time to time. It is imperative that you attempt all these problems, and seek help as soon as possible if you encounter any difficulties.

Objective: This course is extremely important for anybody pursuing studies in engineering and/or physics. Many of the mathematical functions that one encounters in these disciplines depend on more than one variable (for example, the pressure of a gas depends on both its temperature and volume). Other problems involve vector fields, (for example, mappings from R^2 into R^2 or from R^3 into R^3. . . . think of the velocity vectors of each particle of a fluid, or electric and magnetic fields). In this course, we will study the calculus of functions of many variables, including practical issues such as finding extrema (and related optimization problems), multiple integration and applications (e.g. computation of areas and volumes) and surface integrals. We will also learn how to analyze vector fields. This will involve the notions of differentiation and integration of vector fields culminating in the Theorems of Stokes, Gauss and Green.

Evaluation: There will be two mid-term exams: one on October 6 and another on November 10, both during regular class times. There will also be a final exam in December (date and time to be determined). All mid-terms and the final exam are cumulative in nature, i.e. they cover material seen since the first lecture until the exam date.

Final grade

If you receive a mark of less than 40% on the final exam, you will receive an F for the final grade, regardless of your other marks. If your final exam mark is 40% or greater, then your final grade will be computed as follows:

Final grade = 20% for mid-term 1 + 20% for mid-term 2 + 60% for the final exam.

If you are absent from a mid-term and you do not have a valid reason for your absence (e.g. medical certificate), your mid-term mark will be 0%. If you have a valid reason for missing the mid-term, I will transfer the weight of that mid-term exam to your final exam. Under no circumstances will there be a make-up exam. Academic fraud: The University of Ottawa has serious sanctions against those who are found guilty of committing academic fraud (i.e. cheating, plagiarism, etc.). Punishments range from an automatic grade of F for the course all the way up to expulsion from the University.

Student card: You must present your student card to a proctor upon demand at any test or exam. Failure to do so will result in your being asked to leave the exam room, and not being allowed to write the exam.

Cell phones, etc: Please turn off all cell phones before entering the class room, and leave them off for the duration of the lecture. In addition, we ask that you do not use laptop computers in class for purposes not related to the lecture: i.e. chatting, checking email, Facebook, etc. These types of behaviours are detrimental to the class atmosphere, and as such will not be tolerated. While I strongly encourage that you ask questions in class (you may raise your hand to let me know that you have a question), I will not tolerate rudeness nor excessive noise. Students who disrupt will be asked to leave the classroom immediately.

If needed, any modification to this outline will be announced in class. It is your responsibility to keep informed.