Concordia
U N I V E R S I T Y

Faculty of Engineering and Computer Science

ENGR 233
Applied Advance Calculus
Fall 2015

Course objectives and learning outcomes (Attibutes):

To ensure that students acquire the mathematical knowledge and skills needed in their engineering courses and to provide a basis for more advanced techniques which are needed in subsequent years of their programs of study. Over the course span, students should master the necessary knowledge and skills to be able to solve mathematical problems at an appropriate level in: Vectors and vector functions; Functions of several variables; Parametric representation of curves and surfaces; Differential vector calculus; Integral calculus for vectors; Double and triple integrals; Line and surface integrals; Stokes' Theorem; Divergence Theorem; Applications in engineering including fluid dynamics, heat conduction, and waves.

At the end of this course, the student will be able to:
Define and explain the concepts listed above
Apply rules and techniques to solve problems
Identify and formulate engineering problems into mathematical forms, and solve them.

Textbook:
Advanced Engineering Mathematics, by Zill and Wright, 5th edition, Jones and Bartlett Publishers.

Other material may be available on the Instructor website.

Grading:
Midterm: 20%
Final Exam: 70 %
Quizzes: 10%

A score of zero will be given to a missed quiz and a missed midterm. If the missed midterm is because of medical reason, the final exam will be worth 90% of the semester. If the grade of the final is greater then the grade of the midterm, the final will be worth 80% and the midterm 10%.

Calculators: Sharp EL 531 or Casio FX-300 MS; cell phones and other electronic telecommunication devices are prohibited

Lecture's Topics:

7-1 Vectors in 2-Space
7-2 Vectors in 3-Space
7-3 Dot product
7-4 Cross Product

The topics will not be seen in the order listed above. This is only the order of your textbook, for reference.

Other topics may be covered during the semester. If it happens, detail will be given during the Lectures.

Students are expected to attend all of their classes and tutorials and are responsible for any missed work.
Assigned problems will be available on the Moodle website of the course.

CEAB Graduate Attributes: ENGR233:

All courses in the faculty of Engineering and computer science, in addition to the traditional delivery of the material the development of Soft Skill Competencies are to be included. From the provided List of Design Soft Skill Competencies the following items are relevant to this course:
1. An ability to identify, formulate and solve engineering problems.
Students should be able to take an engineering problem and then formulate from it the underlying mathematical, scientific or engineering science problem.
2. An ability to learn by self-study, to integrate knowledge into ones overall education, and to engage in life-long learning.
Every technical professional must be able to learn independently. Almost any course in the curriculum could teach, exercise and evaluate this soft skill. For example some instruction could be given on how one can pick out and summarize the important points in a chapter in a textbook. Then students could be told that they are responsible for certain material on an exam, without that material being lectured on.
3. An ability to function on a team and to lead a team.
Item no. 1 is met partially through the application problems to be found in the textbook. Item no. 2&3 will be done through one Team Assignment(s) (over and above to the regular ones).
Students are also responsible for topics covered in assignments that have not been presented in either the regular lectures or during tutorials.