

**Summer 2010-2011**  
**ENGR 233: Applied Advanced Calculus**  
**(3 Credits)**

**Instructor:** Dr. Anjali Awasthi  
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**Course Timings:**

<i>Class Type</i>	<i>Days</i>	<i>Timings</i>	<i>Room</i>	<i>Location</i>
Lecture	Tuesday, Thursday	11:00- 13:30 am	H-535	SGW
Tut CE	Tuesday, Thursday	08:45-10:25 am	H-401	SGW
Tut CF	Tuesday, Thursday	08:45-10:25 am	H-403	SGW

**Office Hours:** Wednesdays, 11:00 - 1:00 pm

**Prerequisite:** MATH 204 (CEGEP Mathematics 105); MATH 205 (CEGEP Mathematics 203)

**Textbook:** Advanced Engineering Mathematics by Dennis G.Zill and Warren S. Wright, 4th edition, Jones and Bartlett Publishers, 2010.

**Course Description:** This course covers theoretical foundations and practical applications of techniques for applied advanced calculus. The contents include 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. The lectures are organized as follows:

<b>Lecture</b>	<b>Topic</b>	<b>Reference</b>
1	7-1 Vectors in 2 space 7-2 Vectors in 3 space 7-3 Dot product	297-312
2	7-4 Cross product 7-5 Lines and planes in 3 space	313-326
<b>Assignment 1</b>		
3	9-1 Vector functions 9-2 Motion on a curve 9-3 Curvature and components of acceleration	440-454
4	9-4 Partial Derivatives 9-5 Directional Derivatives	454-468

	9-6 Tangent Planes and Normal Lines	
<b>Assignment 2</b>		
5	9-7 Curl and Divergence 9-8 Line Integrals	469-482
6	9-9 Independence of the path	483-492
<b>MIDTERM</b>		
7	9-10 Double Integrals 9-11 Double Integrals in Polar Coordinates	493-504
8	9-12 Green's Theorem 9-13 Surface Integrals	505-517
<b>Assignment 3</b>		
9	9-14 Stoke's Theorem 9-15 Triple Integrals	518-532
10	9-16 Divergence Theorem	533-538
<b>Assignment 4</b>		
11	9-17 Change of variables in multiple integrals	539-547
12	Review Class	
<b>FINAL EXAM</b>		

**Course website:** ENGR 233 on Moodle, Accessible through myconcordia portal

### **Grade Composition**

Assignment (4)	10%
Midterm Exam	35%
Final Exam	55%

### **Note:**

1. There is no direct mapping between numerical percentage grades and final letter grades for the course.
2. There are four Assignments. The Assignments are to be done in groups. Each group comprises of 3-5 students.
3. Assignments are to be submitted in hard copy within one week of date of announcement. Late submissions will be penalized.

### **Student expectations**

Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. You are expected to read the assigned material and actively participate in class discussions. You are expected to be respectful of other people's opinions and to express your views in a calm and reasonable way. Disruptive behaviour will not be tolerated. The Code of Rights and Responsibilities is available at: <http://rights.concordia.ca>

**If you cannot attend class for any reason, unforeseen or not, you are required to come and talk or write to me as soon as possible.**

### **Academic code of conduct**

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behaviour related to the obtention of academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion**. For example, you are not permitted to:

- Copy from anywhere without indicating where it came from
- Let another student copy your work and then submit it as his/her own
- Hand in the same assignment in more than one class
- Have unauthorized material or devices in an exam. Note that you do not have to be caught using them – just having them is an offence
- Copy from someone's else exam
- Communicate with another student during an exam
- Add or remove pages from an examination booklet or take the booklet out of an exam room
- Acquire exam or assignment answers or questions
- Write an exam for someone else or have someone write an exam for you
- Submit false documents such as medical notes or student records
- Falsify data or research results

You are subject to the Academic Code of Conduct. Take the time to learn more at <http://provost.concordia.ca/academicintegrity/>

### **Student Services**

To know about the student services offered at Concordia University, visit the following links:

- **Concordia Counselling and Development** offers career services, psychological services, student learning services, etc.  
<http://cdev.concordia.ca>
- **The Concordia Library Citation and Cycle Guides:**  
<http://library.concordia.ca/help/howto/citations.html>
- **Advocacy and Support Services:**  
<http://supportservices.concordia.ca>
- **Student Transition Centre:**  
<http://stc.concordia.ca>
- **New Student Program:**  
<http://newstudent.concordia.ca>
- **Office for Students with Disabilities:**  
<http://supportservices.concordia.ca/disabilities/>
- **The Academic Integrity Website:**  
<http://provost.concordia.ca/academicintegrity/>

### **Disclaimer**

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.