Please state your full name, course and section when emailing.

Course Website (eClass): [https://eclass.srv.ualberta.ca/portal/](https://eclass.srv.ualberta.ca/portal/)

**Course Description:** Partial differentiation, derivatives of integrals. Multiple integration using rectangular, cylindrical, and spherical coordinates. Vector Field Theory

**Course Prerequisites:** MATH 101. Prerequisite or corequisite: MATH 102.

Notes: (1) Students in all sections of this course will write a common final examination. (2) Restricted to Engineering students. Non-Engineering students who take this course will receive *3.0.
Course Objectives and Expected Learning Outcomes:

Students should be able to:
- Plot level curves and surfaces for functions of two or three variables.
- Evaluate limits of functions of two or more variables.
- Calculate tangent lines and planes to surfaces.
- Understand the concepts of differentials and chain rules for functions of several variables.
- Calculate the rate of change of a function in any direction.
- Maximize and minimize functions using techniques such as Lagrange multipliers.
- Calculate double and triple integrals using Cartesian, cylindrical and spherical coordinates.
- Apply multiple integrals to evaluate centers of mass and moments of inertia.
- Apply multiple integrals to evaluate volumes and surface area.
- Apply line integrals to evaluate centers of mass, moments of inertia, and work.
- Understand the physical significance of divergence and curl.
- Represent surfaces in parametric form and evaluate surface integrals.
- Understand the significance of advanced theorems such as Green's theorem, the divergence and Stokes' theorems.

1. Required Learning Resources:


Syllabus:  
Text Sections:  
1. Chapter 14: 14.1-14.8  
2. Chapter 15: 15.1-15.9  
3. Chapter 16: 16.1-16.8

Grade Evaluation: The course mark will be calculated based on the following breakdown:

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Weight</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labs</td>
<td>10%, 5 lab tests, lowest mark will be dropped</td>
<td>TBA</td>
</tr>
<tr>
<td>Written Assignments</td>
<td>5%, lowest mark will be dropped</td>
<td>See eClass for due dates</td>
</tr>
<tr>
<td>Online Assignments</td>
<td>5%, lowest mark will be dropped</td>
<td>See eClass for due dates</td>
</tr>
<tr>
<td>Midterm</td>
<td>30%</td>
<td>Oct. 28, Time: TBA</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50%</td>
<td>Dec. 16, 2 PM</td>
</tr>
</tbody>
</table>

Note: The date of the final examination is set by the Registrar and takes precedence over the final examination date reported in this document. Students must verify this date on BearTracks when the Final Exam Schedule is posted.

The final letter grade will be determined from the course mark as follows:

Students achieving 50% or more of the total available marks for the course will receive a grade of D or better. Students achieving
90% or more will receive an A. Between 50% and 90%, letter grades will be assigned in roughly (but not exactly) equal intervals. Grades are unofficial until approved by the Department and/or Faculty offering the course.

**Online Homework (Enhanced WebAssign):**

Online homework is required component of the course. Completing the online homework helps students self-assess their progress in the course and prepare for exams. Online Homework will be administered through Enhanced WebAssign (EWA). A student account has been created for you on EWA. Please see the document: “Enhanced Webassign (EWA) Registration Instructions” posted on eClass on how to register for EWA. You can use the code you used for Math 100 and Math 101.

Once you have registered for EWA, you will be able to see the homework assignments and when a homework is available and due. After an answer is entered on EWA, you will get an instant response as to if your answer is correct. There will be a total of 10 EWA assignments. Lowest mark will be dropped. NO LATE ASSIGNMENTS WILL BE ACCEPTED. Failure to submit an assignment on time will result in a mark of zero.

**On-Line Homework Disclaimer:** On-line homework is a component of this course and is provided by a third-party company. Please be aware that this company will be storing assessment information that may be associated with you. If you have any concerns about this, or if you do not wish any of your personal information conveyed to the third-party company, please contact the instructor of the course.

**Written Homework:**

There will be 10 written homework assignments, distributed on the
website. Assignments will be graded using Crowdmark. Details about the way assignments are to be submitted are posted on eClass. **Late assignments will not be graded and will result in a mark of 0.**

Please check the course web page regularly for homework, solutions and other relevant information.

**Labs:** There will be weekly labs beginning September 11, 2017. Lab manuals may be purchased in CAB 632, beginning September 5th, from 08:00-12:15 and 13:00-16:30, for $7.00 (cash only).

**Further Information:**

**Missed Assignment/Lab:** Failure to submit an assignment/project on time will result in a mark of zero

**Excused Absence Where the Cause is Religious Belief:**

For an excused absence where the cause is religious belief, a student must contact the instructor(s) within two weeks of the start of Spring classes to request accommodation for the term (including the final exam, where relevant). Instructors may request adequate documentation to substantiate the student request.

**Missed Midterm:** A student who cannot write the midterm due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for an excused absence. To apply for an excused absence, the student must present supporting documentation pertaining to the absence to the instructor within two working days following the scheduled date of the missed term work, or as soon as the student is able. In the case of an incapacitating illness, either a medical note or a statutory declaration (which can be obtained at the student's Faculty Office) will be accepted.
There is **no deferred midterm exam**. If you miss it and have a valid reason for doing so, the weight of the midterm will be transferred to the final exam; *i.e.*, the weight of your final exam will be 80%. An excused absence is a privilege and not a right; there is no guarantee that an absence will be excused. Misrepresentation of Facts to gain an excused absence is a serious breach of the Code of Student Behavior.

**Missed Final Examination:** A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can **apply** for a deferred final examination. Students who failed at the start of term to request exam accommodations for religious beliefs are expected to follow the normal deferred final examination process. Such an application must be made to the student's Faculty office within 48 hours of the missed examination and must be supported by a Statutory Declaration (en lieu of a medical statement form) or other appropriate documentation (Calendar section 23.5.6). Deferred examinations are a privilege and not a right; there is no guarantee that a deferred examination will be granted. Misrepresentation of Facts to gain a deferred examination is a serious breach of the Code of Student Behavior.

**Deferred final exam:** 9 AM, Saturday, Jan 13, 2018. Meet outside CAB 357, at 8:30 AM.

**Re-examination:** A student who writes the final examination and fails the course may apply for a re-examination. Re-examinations are rarely granted in the Faculty of Science. These exams are governed by University (Calendar section 23.5.5) and Faculty of Science Regulations (Calendar section 192.5.9). Misrepresentation of Facts to gain a re-examination is a serious breach of the Code of Student Behavior.
STUDENT RESPONSIBILITIES

**Academic Integrity:** The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behavior (online at [www.governance.ualberta.ca](http://www.governance.ualberta.ca)) and avoid any behavior which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University. All forms of dishonesty are unacceptable at the University. Any offence will be reported to the Senior Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offences. Anyone who engages in these practices will receive at minimum a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. As well, in the Faculty of Science the sanction for cheating on any examination will include a disciplinary failing grade (no exceptions) and senior students should expect a period of suspension or expulsion from the University of Alberta.

**Exams:** Your student photo identification is required at exams to verify your identity. Students will not be allowed to begin an examination after it has been in progress for 30 minutes. Students must remain in the exam room until at least 30 minutes has elapsed. **Books, notes, formula sheets, calculators, cell phones, smart watches and other electronic devices are not permitted during the midterm and final exams!** All such items must be turned off and stored in your bags during exams.

**Recording and/or Distribution of Course Materials:**
Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

**Students eligible for accessibility-related accommodations (students registered with Student Accessibility Services: SAS):** Eligible students have both rights and responsibilities with regard to accessibility-related accommodations. Consequently, scheduling exam accommodations in accordance with SAS deadlines and procedures is essential. Please note adherence to procedures and deadlines is required for U of A to provide accommodations. Contact SAS (www.ssds.ualberta.ca) for further information.

**Academic Support Centre:** Students who require additional help in developing strategies for better time management, study skills or examination skills should contact the Academic Support Centre (2–300 Student Union Building).

**Disclaimer:** Any typographical errors in this Outline are subject to change and will be announced in class.