



DEPARTMENT OF MATHEMATICS AND STATISTICS  
COURSE OUTLINE

**Course:** Math 277 – Multivariable Calculus for Engineers and Scientists

**Dates:** January 08, 2018– April 13, 2018

1.

<u>Lec</u>	<u>Day</u>	<u>Time</u>	<u>Location</u>	<u>Instructor</u>	<u>Office</u>	<u>Phone</u>	<u>Email</u>	<u>Office Hours</u>
L01	MWF	08:00-08:50	ENC 70	Yousry Elsabrouty	MS 418	403 - 220 - 2255	<a href="mailto:yelsabro@ucalgary.ca">yelsabro@ucalgary.ca</a>	W: 11:00 – 12:00
L02	MWF	01:00-01:50	ENG 60	Yousry Elsabrouty	MS 418	403 - 220 - 2255	<a href="mailto:yelsabro@ucalgary.ca">yelsabro@ucalgary.ca</a>	W: 11:00 – 12:00
L03	TR	03:30- 04:45	ENG 60	Ryan Hamilton	MS 574	403 - 220 - 3950	<a href="mailto:rhamilt@ucalgary.ca">rhamilt@ucalgary.ca</a>	MW : 12:30 – 14:00 TR : 13:00 – 14:00
L04	TR	12:30-01:45	ST 140	Yuriy Zinchenko	MS 524	403 - 220 - 4044	<a href="mailto:yzinchen@ucalgary.ca">yzinchen@ucalgary.ca</a>	TBA

Desire 2 Learn (D2L) course name: Math 277 All Lectures – Winter 2018 – Multivariable Calculus for Engineers and Scientists  
Department of Mathematics and Statistics – MS476 Telephone number – 403-220-5210

2. **Prerequisites:** Mathematics 275 or Applied Mathematics 217; or consent of department

(see Section 3.5C of Faculty of Science [www.ucalgary.ca/pubs/calendar/current/sc-3-5.html](http://www.ucalgary.ca/pubs/calendar/current/sc-3-5.html) and Course Descriptions [www.ucalgary.ca/pubs/calendar/current/course-desc-main.html](http://www.ucalgary.ca/pubs/calendar/current/course-desc-main.html))

3. **Grading:** The University policy on grading and related matters is described sections F.1 and F.2 of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Assignments (4)	20% (Online using Mathxl)
Midterm test (1)	30% (Out of Class: Friday March 9 <sup>th</sup> , 06:00-07:30 PM)
Final Examination	50% (To be scheduled by the Registrar)

Each piece of work (assignment, midterm test or final examination) submitted by the student will be assigned a letter grade.

The final grade for the course will be a weighted grade point average of the individual letter grades, using the weighting factors in the table above and then converted to a letter grade using the official university grade point equivalents.

A passing grade in the Final Examination is essential for an overall grade of D or better in the course.

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also Section E.6 of the University Calendar. In the unlikely event of a health problem, the [Physician/Counsellor Statement Form](#) must be accompanied by either "[Application for Deferred Final Examinations](#)" or an "[Application for Deferment of Term Work](#)" in order to gain approval for such request. For all other missed term work such as quizzes, assignments or midterms, the [Physician/Counsellor Form](#) must be handed directly to your course instructor for approval.

5. **Scheduled out-of-class activities:** Dates and times of approved class activities held outside of class hours.

Midterm — Friday March 9<sup>th</sup>, 2018 , 06:00-07:30 PM.

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.

If you have a clash with this out-of-class-time-activity, please inform your instructor as soon as possible so that alternative arrangements may be made for you..

6. **Course Materials:** Calculus, A Complete Course, Seventh, Eighth or Ninth Edition, by R.A. Adams and Christopher Essex, Pearson Education Canada – sold in the University Bookstore.

Online Course Component: Online homework through Mathxl is available on any computer that has internet access to those who opt to purchase the above textbook package. Those who do not purchase the textbook will be given access to just the homework component through some select computers labs on campus. Either way, you are responsible for completing the assigned homework in a timely fashion. The choice is up to you: If you prefer the flexibility of working on your homework from anywhere and access to the eBook. The homework is a critical component of the course to help prepare you for the exams as well as help you self-assess your progress in the course. **Unless otherwise noted by the instructor, all D2L/course webpage materials including lecture notes, lab worksheets and solutions, will be removed from the course site on May 10, 2018**

7. **Examination Policy:** The use of calculators and/or portable computing devices will not be allowed on examinations. Students should also read the Calendar, Section G, on Examinations

8. **Approved Mandatory and Optional Course Supplemental Fees:**

There are no mandatory or optional course supplemental fees for this course.

9. **Writing across the Curriculum Statement:**

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of those reports. See also Section [E.2](#) of the University Calendar.

10. **Human studies statement:**

Students will not participate as subjects or researchers in human studies.

11. **Reappraisal of Grades:**

A student wishing a reappraisal should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised

may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

1. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **15 days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [I.1](#) and [I.2](#) of the University Calendar

2. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**

- a. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation, suspension, or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- b. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).

- c. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accomodations-for-students-withdisabilities\\_0.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Mathematics & Statistics, Jim Stallard by email [jbstall@ucalgary.ca](mailto:jbstall@ucalgary.ca) or phone 403-220-3953. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question: <http://www.ucalgary.ca/pubs/calendar/current/e-4.html>

- d. **Safewalk:** Campus Security will escort individuals day or night ([www.ucalgary.ca/security/safewalk/](http://www.ucalgary.ca/security/safewalk/)). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- e. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see also [www.ucalgary.ca/legalservices/foip](http://www.ucalgary.ca/legalservices/foip).
- f. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). Student Ombudsman, Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca).
- g. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **SU Wellness Center:** The Students union Wellness Center provides health and wellness support for students including

## Course Outcomes

1. Adapt to the terminology, vocabulary of multivariable calculus and recognize wide range of symbols it employs.
2. Develop an understanding of the key concepts of multivariable calculus and use to compute Limits, Partial Derivatives, Directional Derivatives and Multiple Integrals of functions of several variables.
3. Use available tools such as Implicit function Theorem to significantly reduce the complexity of calculations particularly for Multiple Integrals
4. Perform calculus techniques to solve a wide variety of optimization problems
5. Analyze appropriate real-world problems in interdisciplinary fields
6. Explore the relationship between key multivariable calculus concepts and its geometric representation for an enhanced interpretation of certain physical or natural property