

# Course Outline

## MATH 311: Linear algebra

### Instructor(s)

**Lecturer** Dr. Heath Emerson

**Research Area** Operator algebras and Noncommutative Geometry

**Email** hemerson@uvic.ca

**Phone** 250-721-7462 [For emergency use only]

**Office** David Turpin Building A447

### General Course Information

**Number of Units** 1.5

**Pre-requisites** One of Math 110, 133, 211, or 233A, and one of Math 212 or 233C.

### Office Hours and Assistance

**Day** Monday 9:00-10:00

**Day** Thursday 9:00-10:00

**By appointment** (send email to book one)

**The Mathematics & Statistics Assistance Centre** is a large space where students can go to work, on their own or in groups, and to discuss math & stats problems. The Centre is staffed with talented Teaching Assistants who are happy to discuss primarily first and second year course material with you. Please see <http://www.math.uvic.ca/~msassist/index.html> for more information.

**Math Club** Students in Undergraduate Mathematics and Statistics (SUMS) was founded in 2014 as the reincarnation of a previous undergraduate course union that had been inactive for a few years. Please see <http://www.uvic.ca/science/math-statistics/current-students/undergraduate/sums/index.php> for more information.



## Course Materials and Online Resources

**Textbook**     *Linear algebra*, by Stephen Friedberg, Arnold Insel and Lawrence Spence.

**Course webpage** <http://www.math.uvic.ca/courses/2017s/math311/a01/index.html>

## Class Meetings

Tuesday, Wednesday and Friday, 9:30-10:20 in CLE A314.

## Specific Topics

We will cover vector spaces (over a general field), linear transformations, coordinate representation of linear transformations by matrices, systems of equations and elimination methods in solving them, determinants – their abstract characterization and computational methods by co-factor expansions, eigenvalues, eigenvectors and diagonalization, the Gram-Schmidt orthogonalization process, and selected topics from: Inner product spaces and normal and self-adjoint operators, singular values, Markov chains, and Jordan canonical form.

## Evaluation and Grading

Your final percentage grade will be computed according to the following scheme.

Homework Assignments	Midterms	Final Exam
Bi-weekly	Jan. 11, Feb. 8	TBA
25%	25%	50%

**Missing work** No late assignments will be accepted except in case of illness, in which case a doctor's note will be required. Midterms missed by illness also require a doctor's note. If a midterm is missed due to illness, the missing grade will be replaced by the average of your grade on the Final Exam and your grade on the other midterm. Missing two midterms will result in an incomplete grade for the course.

**Accessibility** Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Resource Centre for



Students with a Disability (RCSD) as soon as possible. The RCSD staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <http://rcsd.uvic.ca/>. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

**Grading** Percentage scores will be converted to letter grades according to the university-wide standard table

(Undergraduate: <http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/grading.html#>  
Graduate: <http://web.uvic.ca/calendar2016-09/grad/academic-regulations/grading.html#>)

**Final Examination** Off-schedule final examinations (i.e., deferred examinations) are given only in accordance with the university policy as outlined in the Calendar. If you are unable to write a final examination due to illness, accident or family affliction, please refer to the following webpages for detailed instructions how to proceed: <http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/concessions.html#>  
Students are strongly advised not to make plans for travel or employment during the final examination period as special arrangements will not be made for examinations that conflict with such plans.

**Supplemental Examinations.** The Department of Mathematics and Statistics does not award 'E' grades or offer Supplemental Examinations in any of its courses.

## Policies and Ethics

**Attendance** The university Calendar states 'Students are expected to attend all classes in which they are enrolled.' Our courses are conducted on that basis. If you miss an announcement (information concerning midterms, corrections to assignment, etc.) because you did not attend class, you must accept the consequences of not having learned of the change. (see <http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/attendance.html#>).

**Guidelines on Religious Observances** Where classes or examinations are scheduled on the holy days of a religion, students may notify their instructors, at least two weeks in advance, of their intention to observe the holy day(s) by absenting themselves from classes or examinations. Instructors will provide reasonable opportunities for such students to make up work or missed examinations.

**Academic Integrity** Academic integrity is intellectual honesty and responsibility for academic work that you submit individual or group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offenses.

### **The responsibility of the institution**

Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

### **The responsibility of the student**

Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are



unsure about the standards for citations or for referencing your sources, ask your instructor. Depending on the severity of the case, penalties include a warning, a failing grade, a record on the students transcript, or a suspension.

It is your responsibility to understand the University's policy on academic integrity:

<http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/academic-integrity.html#>

## How to Succeed in This Course

Students must follow the text with attention, the lectures support the textbook and are intended as a discussion around material introduced there. The text contains many excellent exercises, and it is highly recommended that students attempt at least a half-dozen or so from each Section, to build intuition for the ideas and practice proving things. Doing practice problems with also prepare you for the midterms and final exam. Formal problem sets will be published biweekly, and will be due 2 weeks from the date of posting. Assignments will be posted on the course website.

## Course Schedule (Dates are approximate)

Week of	Lecture
Feb. 8	<b>Midterm 1.</b>
Feb. 13-17	<b>Reading break.</b>
March 8	<b>Midterm 2.</b>
April 4	<b>Last day of classes.</b>

