UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF MATHEMATICS & STATISTICS
COURSE OUTLINE

1. **Course:** MATH 213, Honours Linear Algebra I -- Winter 2018

   Lecture 01: (MWF, 09:00-09:50 in SS541)

Instructor Name	Email	Phone	Office	Hours
Kristine Bauer	bauerk@ucalgary.ca	220-7675	MS 578	TBA

   Course Site:

   D2L: MATH 213 L01-(Winter 2018)-Honours Linear Algebra I

   Department of Mathematics & Statistics: MS 476, 403 220-5210,

   Students must use their U of C account for all course correspondence.

2. **Prerequisites:**

   See section 3.5.C in the Faculty of Science section of the online Calendar.

   A grade ofÂ 80Â per cent or higher in Mathematics 30-1 or Pure Mathematics 30.
   Credit forÂ Mathematics 213Â andÂ 211Â will not be allowed.

3. **Grading:**

   The University policy on grading and related matters is described in F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %
Assignments [10]	25%
Quizzes [2]	10%
Midterm exam	25%
Final Exam	40%

   Each of the above components will be given a letter grade using the official university grading system. The final grade will be calculated using the grade point equivalents weighted by the percentages given above and then converted to a final letter grade using the official university grade point equivalents.

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.3 of the University Calendar

5. **Scheduled out-of-class activities:**

   There are no out-of-class activities scheduled for this course.

   REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. **Course Materials:**

Required Textbook(s):

Friedberg, Insel & Spence, Linear Algebra, 4th edition, Pearson

Optional Textbook(s):

Lipschutz and Lipson, Schaum's outline of linear algebra, 5th edition, McGraw-Hill Education

7. **Examination Policy:**

   No books, notes or calculators will be allowed during examinations. Students should also read the Calendar, Section G, on Examinations: **www.ucalgary.ca/pubs/calendar/current/g.html**

   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.

   In this course, the quality of the student's writing in homework, quizzes and exams will be a factor in the evaluation of those items.

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 or 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-with-disabilities_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 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/) . Call 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.

f. **Student Union Information:** VP Academic, Phone: 403-220-3911 Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: 403-220-3913 Email: sciencerep@su.ucalgary.ca. Student Ombudsman, Email: 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 Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see www.ucalgary.ca/wellnesscentre or call 403-210-9355.

Department Approval: Electronically Approved **Date:** 2017-12-22 11:14

Course Outcomes

1. associate a system of linear equations to its coefficient matrix, and manipulate this matrix to obtain solutions
2. produce linear transformations and compute their kernel and image (null space and image space).
3. compute the characteristic polynomial of a matrix, its eigenvalues and eigenvectors, and diagonalize the matrix.
4. identify criteria for the invertibility of a linear transformation or its associated matrix, obtain the inverse when it exists
5. interpreting a linear transformation as a map from one vector space to another, and to be able to construct such maps given a basis of the domain and interpret them geometrically in dimensions 1, 2 and 3
6. reading and recreating proofs of theorems covered in the course, such as theorems governing the number of solutions of a linear system, the properties of the inverse ma-trix, criteria for subspaces, independence of dimension and the rank-nullity theorem, change of basis, the determinant, and eigenvalues, eigenvectors and diagonalization.
7. restating all of the technical definitions and named theorems covered in the course and using these definitions and theorems from memory to construct original solutions to problems and/or proofs
8. constructing mathematical proofs using a variety of methods, including direct proofs, inductive proofs, proof by contrapositive and proof by contradiction.
9. verifying that an abstract mathematical object satisfies a given definition, or is a counterexample.