

THE UNIVERSITY OF WESTERN ONTARIO
DEPARTMENT OF MATHEMATICS

Mathematics 1229A
Methods of Matrix Algebra

September - December 2016

INSTRUCTORS: (*Course Coordinator: V. Olds*)

001 - A. Fathi; 002 - A. O'Hara; 003 - V. Olds; 004 - S. Sadeghi; 530 & 531 (Brescia) - C. Florence; 550 (Huron) - J. Rastegari; 551 (Huron) - M. Ataei; 570 & 571 (King's) - D. Meredith; 572 (King's) - S. Kuzmin; 573 (King's) - R. Valluri

TEXTBOOK:

Custom Edition of *Elementary Linear Algebra* by S. Venit, W. Bishop and J. Brown, published by Nelson Education Ltd., ISBN: 0176559299

PREREQUISITES:

One or more of Ontario Secondary School MCF3M, MCR3U, or equivalent.

ANTIREQUISITES:

Applied Mathematics 1411A/B, 2811B, Mathematics 1600A/B, 2120A/B, 2155F/G, 2211A/B, the former 2155A/B.

COURSE OUTLINE:

Vectors in \mathbb{R}^m ; Equations of lines and planes; Linear Equations; Solution of Linear Systems; Matrix Algebra; Matrix Multiplication and Inverses; Determinants.

COURSE WEB SITE:

Various supplemental materials, such as required extra homework problems, practice tests, and solutions to the homework exercises, are posted on the course OWL web site. In addition, there are forums on which students may post questions. Important information will be posted on the NEWS forum and/or on the class page on the web site. All students are expected to be aware of information, and make use of materials, posted on the course web site. As well, some class sections use the online quizzes on the web site as the class work component of the grade.

WHAT IS EXPECTED OF THE STUDENT?

Students should attend all classes, make a serious effort to understand all course material, and do all the assigned homework. The student must assume responsibility for any missed classes. It is up to the student to seek out help when needed. The student is responsible for being aware of all relevant information posted on the OWL web site.

Please contact your course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x82147 for any specific question regarding an accommodation.

Learning Objectives

Students will use the concept of vectors to describe lines and planes. Students are introduced to matrix algebra which they will use to solve systems of linear equations. At the end of this course, students should also be able to compute and use determinants to solve problems.

EVALUATION OF STUDENT PERFORMANCE:

Students will be assessed on the basis of "Class Work", 2 Term Tests, and a Final Exam. The means of assessing the Class Work component will be determined by the instructor of each section, and may be for participation, quizzes, assignments, etc. For each class, information about how the Class Work component will be assessed, and details of the timing, will be announced in class and also posted on the appropriate "class page" on the OWL web site. (*Some sections will use Online Quizzes.*)

The 2 Term Tests, each 90 minutes in length, will be held on:

Friday October 14 2016, 7:00 - 8:30 p.m. and **Friday November 11 2016**, 7:00 - 8:30 p.m.

Locations of these tests will be announced in class and/or on the course web site.

The Final Exam will be 3 hours in length, covering all of the course material. This exam will be scheduled by the Registrar's Office during the December Exam Period.

Calculation of Final Grade:

Each Term Test will count for 20%, the Final Exam will count for 40% and the Class Work component will count for 10%. The remaining 10% weight will be assigned to whichever of the 3 tests/exams is the student's best mark.

Notes:

1. The Term Tests and Exam will all have some multiple choice questions and some written answer questions.
2. **NO calculators or other electronic devices or any other aids are allowed on tests and exams.**
3. See Absence / Missed Work policy on next page.

CLASS SCHEDULE:

Section	Campus	Instructor	Days & Times	Location
001	Main	A. Fathi	MWF 9:30	AHB 1R40
002	Main	A. O'Hara	MWF 12:30	HSB 40
003	Main	V. Olds	MWF 1:30	SSC 2050
004	Main	S. Sadeghi	MWF 8:30	WSC 55
530	Brescia UC	C. Florence	MTuTh 8:30	BR - 203
531	Brescia UC	C. Florence	MTuW 9:30	BR - 203
550	Huron UC	J. Rastegari	MWF 1:30	HUC - V 214
551	Huron UC	M. Ataei	MWF 8:30	HUC - V 214
570	King's UC	D. Meredith	Tu 1:30 - 2:30 Th 1:30 - 3:30	KUC - SA 150 KUC - W 166
571	King's UC	D. Meredith	Tu 9:30 - 10:30 Th 9:30 - 11:30	KUC - W 168 KUC - W 168
572	King's UC	S. Kuzmin	MW 7:00 - 8:30	KUC - W 168
573	King's UC	R. Valluri	M 8:30 - 10:30 W 8:30 - 9:30	KUC - W 166 KUC - W 166

INSTRUCTOR CONTACT INFORMATION: (any changes/updates will be posted on OWL)

V. Olds (003 & Course Coordinator): volds@uwo.ca, MC 103G, X86520

A. Fathi (001): afathiba@uwo.ca, MC 103H, X86884

A. O'Hara (002): aohara@uwo.ca, MC 103A, X82254

S. Sadeghi (004): ssadegh3@uwo.ca, MC 103A, X82254

C. Florence (530 & 531): cflorenc@uwo.ca, BUC MSJ 301E, 519 432-8353

J. Rastegari (550?): jrastega@uwo.ca, HUC - OR 152

M. Ataei (551?): mataeija@uwo.ca, HUC - OR 152

D. Meredith (571): meredith@uwo.ca, KUC - DL 120, KUC X4322

S. Kuzmin (572): skuzmin@uwo.ca, KUC - SA 231

R. Valluri (573): valluri@uwo.ca, KUC - BH 110; main campus: PAB 112, X86499

Note: Any email sent to an instructor (and especially to the course coordinator) MUST say Math 1229A in the subject line. Any email without this, and/or any email sent from other than a UWO email address, may be deleted unread.

SENATE POLICY ON PREREQUISITES:

Prerequisite checking is the **student's responsibility**. Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

STATEMENT ON ACADEMIC OFFENCES:

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

ABSENCE / MISSED WORK:

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation *to your Dean's Office as soon as possible* and contact *your instructor immediately*. It is the student's responsibility to make alternative arrangements with his or her instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information concerning UWO's Policy on Accommodation for Medical Illness please refer to this policy at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf

A student requiring academic accommodation due to illness should use the Student Medical Certificate when visiting an off-campus medical facility or request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here: https://studentservices.uwo.ca/secure/medical_document.pdf

A makeup will be held for each term test as well as for the final exam. Only students with prior permission from their instructor will be allowed to write the makeup for a test. Only students with a Recommendation for Special Exam from their Dean's Office will be allowed to write a makeup for the Final Exam. Any student who misses a portion of the Class Work component of the grade for any legitimate reason should contact your instructor as soon as possible. Supporting documentation may be required. In the case of missed Class Work, or if a student is unable to write the scheduled makeup for a Term Test due to a documented prolonged or recurring absence or other legitimate conflict, your instructor will decide whether to accommodate by rescheduling or by reweighting that component of the grade.

SUPPORT SERVICES

Office of the Registrar

UWO www.registrar.uwo.ca

Brescia www.brescia.uwo.ca/academics/registrar-services

Huron www.huronuc.on.ca/CurrentStudents/StudentLifeandSupportServices/

AcademicResources

King's www.kings.uwo.ca/academics/academic-deans-office/

Student Development Services www.sdc.uwo.ca
 Learning Skills Services <http://sdc.uwo.ca/learning/>
 USC <http://westernusc.ca/services/>
 Academic Calendar www.westerncalendar.uwo.ca
 ITS www.uwo.ca/its/helpdesk

Students who are in emotional/mental distress should refer to Mental Health @ Western via the link given below for a complete list of the options about how to obtain help: <http://www.uwo.ca/uwocom/mentalhealth/>

Mathematics 1229A - Suggested Exercises - Fall 2016

Section	Page	Problems
§1.1	11	1 - 27, 37.
§1.2	20	1 - 9, 13 - 23, 34.
§1.3	29	1 - 21, 25, 27, 29.
		Extra Chapter 1 Problem Sheet. (Posted on course web site.)
§2.1	48	1 - 13, 16 - 25.
§2.2	55	1 - 15.
§2.3	69	1 - 17, 19, 21, 23 - 26, 37.
§2.2	56	19 - 24 (use Gauss-Jordan).
§3.1	96	1 - 7, 9 - 14, 17 - 27, 35 - 38.
§3.2	107	1 - 7, 9 - 19, 21, 23, 25, 30 - 33.
§3.3	116	1 - 6, 9 - 21.
§4.1	151	1 - 22, 27 - 29, 34.
§4.2	163	1 - 19, 25, 26.
§4.3	172	1, 3, 5, 7, 9, 11, 13.

Notes:

- Page numbers and text references refer to the custom published text and are the same in the full Venit, Bishop and Brown (1st ed.) text.
- Any changes to this list will be announced on the NEWS and/or Homework forums in OWL.
- Answers to all assigned questions, and complete solutions for many, are posted on the course web site.

2016-17 BRESCIA UNIVERSITY COLLEGE ACADEMIC POLICIES AND REGULATIONS

1. POLICY REGARDING MAKEUP EXAMS AND EXTENSIONS OF DEADLINES

When a student requests academic accommodation (e.g., extension of a deadline, a makeup exam) for work representing 10% or more of the student's overall grade in the course, it is the responsibility of the student to provide acceptable documentation to support a medical or compassionate claim. All such requests for academic accommodation **must** be made through an Academic Advisor and include supporting documentation. Academic accommodation for illness will be granted only if the documentation indicates that the onset, duration and severity of the illness are such that the student could not reasonably be expected to complete her academic responsibilities. Minor ailments typically treated by over-the-counter medications will not normally be accommodated. Documentation shall be submitted as soon as possible to the student's Academic Advisor indicating the period of illness and when the student should be able to resume academic responsibilities. Students must submit their documentation along with a request for relief specifying the nature of the accommodation being requested no later than two business days after the date specified for resuming responsibilities. Appropriate academic accommodation will be determined by the Dean's Office in consultation with the student's instructor(s). Please note that personal commitments (e.g., vacation flight bookings, work schedule) which conflict with a scheduled test, exam or course requirement are **not** grounds for academic accommodation.

A UWO Student Medical Certificate (SMC) is **required** if a student is seeking academic accommodation on medical grounds. This documentation should be obtained at the time of the initial consultation with the physician/nurse practitioner or walk-in clinic. A SMC can be downloaded from: <http://www.westerncalendar.uwo.ca/2016/pg117.html> The student must request documentation sufficient to demonstrate that her ability to meet academic responsibilities was seriously affected. Please note that under University Senate regulations documentation stating simply that the student "was seen for a medical reason" or "was ill" is **not** adequate to support a request for academic accommodation.

Whenever possible, requests for academic accommodation should be initiated in advance of due dates, examination dates, etc. Students must follow up with their professors and Academic Advisor in a timely manner.

The full policy on requesting accommodation due to illness can be viewed at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

2. ACADEMIC CONCERNS

If you feel that you have a medical or personal problem that is interfering with your work, contact your instructor and Academic Advisor as soon as possible. Problems may then be documented and possible arrangements to assist you can be discussed at the time of occurrence rather than on a retroactive basis. Retroactive requests for academic accommodation on medical or compassionate grounds may not be considered.

If you think that you are too far behind to catch up or that your work load is not manageable, you should consult an Academic Advisor. If you consider reducing your workload by dropping one or more courses, this must be done by the appropriate deadlines (refer to the Registrar's website, www.registrar.uwo.ca, for official dates). You should consult with the course instructor and the Academic Advisor who can help you consider alternatives to dropping one or more courses. *Note*

that dropping a course may affect OSAP eligibility and/or Entrance Scholarship eligibility.

The Dean may refuse permission to write the final examination in a course if the student has failed to maintain satisfactory academic standing throughout the year or for too frequent absence from the class or laboratory (<http://www.westerncalendar.uwo.ca/2016/pg130.html>)

3. ABSENCES

Short Absences: If you miss a class due to a minor illness or other problems, check your course outline for information regarding attendance requirements and make sure you are not missing a test or assignment. Cover any readings and arrange to borrow notes from a classmate. Contact the course instructor if you have any questions.

Extended Absences: If you have an extended absence, you should contact the course instructor and an Academic Advisor. Your course instructor and Academic Advisor can discuss ways for you to catch up on missed work and arrange academic accommodations, if appropriate.

4. POLICY ON CHEATING & ACADEMIC MISCONDUCT

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: <http://www.westerncalendar.uwo.ca/2016/pg113.html>

Students are responsible for understanding the nature of and avoiding the occurrence of plagiarism and other academic offences. Students are urged to read the section on Scholastic Offences in the Academic Calendar. Note that such offences include plagiarism, cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. Students are advised to consult the section on Academic Misconduct in the Western Academic Calendar.

If you are in doubt about whether what you are doing is inappropriate or not, consult your instructor, the Student Services Centre, or the Registrar. A claim that "you didn't know it was wrong" is not accepted as an excuse.

The penalties for a student guilty of a scholastic offence (including plagiarism) include refusal of a passing grade in the assignment, refusal of a passing grade in the course, suspension from the University, and expulsion from the University.

Plagiarism:

Students must write their essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar).

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com.

Computer-marked Tests/exams:

Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating. Software currently in use to score computer-marked multiple-choice tests and exams performs a similarity review as part of standard exam analysis.

5. PROCEDURES FOR APPEALING ACADEMIC EVALUATIONS

All appeals of a grade must be directed first to the course instructor. If the student is not satisfied with the decision of the course instructor, a written appeal signed by the student must be sent to the Department Chair. If the response of the department is considered unsatisfactory to the student, she may then submit a signed, written appeal to the Office of the Dean. Only after receiving a final decision from the Dean may a student appeal to the Senate Review Board Academic. A Guide to Appeals is available from the Ombudsperson's Office, or you can consult an Academic Advisor. Students are advised to consult the section on Student Academic Appeals under Academic Rights and Responsibilities in the Western Academic Calendar (<http://www.westerncalendar.uwo.ca/2016/pg112.html>)

6. PREREQUISITES AND ANTIREQUISITES

Unless you have either the prerequisites for a course or written special permission from your Dean to enroll in it, you will be removed from the course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisite(s).

Similarly, you will also be deleted from a class list if you have previously taken an antirequisite course unless this has the approval of the Dean. These decisions may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course because you have taken an antirequisite course.

7. SUPPORT SERVICES

The Brescia University College Registrar's website, with a link to Academic Advisors, is at <http://brescia.uwo.ca/academics/registrar-services/> . The website for the Student Development Centre at Western is at <http://www.sdc.uwo.ca/> . Students who are in emotional/mental distress should refer to Mental Health @ Western http://uwo.ca/health/mental_wellbeing/ for information including a complete list of options about how to obtain help.

Portions of this document were taken from the Academic Calendar, the Handbook of Academic and Scholarship Policy and the Academic Handbook of Senate Regulations. This document is a summary of relevant regulations and does not supersede the academic policies and regulations of the Senate of the University of Western Ontario.