



**Math1229A 573**  
**Methods of Matrix Algebra**  
**Fall 2025**

Instructor: Dr. Heekyoung Bae  
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**Course Information**

**Mode of Instruction:** In Person

**Calendar Description:**

Matrix algebra including vectors and matrices, linear equations, determinants. This course is intended primarily for students in the Social Sciences, but may meet minimum requirements for some Science modules.

**Pre-requisite(s):** One or more of Ontario Secondary School MCF3M, MCR3U, Mathematics 0109A/B, or equivalent.

**Anti-requisite(s):** Mathematics 1600A/B, Mathematics 1700A/B, Mathematics 2155F/G, Mathematics 2211A/B, Numerical and Mathematical Methods 1411A/B, the former Applied Mathematics 1411A/B, the former Applied Mathematics 2811A/B, the former Mathematics 2120A/B.

**Extra Information:** 3 lecture hours

**Course Weight:** 0.50

**Breadth:** CATEGORY C

**Subject Code:** MATH

Notice: Unless you have either the requisites for this course (fulfilment of pre-requisites, no anti-requisite conflicts), or special permission from your Dean to enrol 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.

WESTERN UNIVERSITY  
KING'S SCHOOL OF MANAGEMENT, ECONOMICS, AND MATHEMATICS

**Mathematics 1229A**  
**Methods of Matrix Algebra**

September - December 2025

**INSTRUCTOR INFORMATION**

**Co-coordinator** J. Turnbull ([jturnbu7@uwo.ca](mailto:jturnbu7@uwo.ca))

<b>Section</b>	<b>Instructor</b>	<b>Email</b>
570	J. Turnbull	<a href="mailto:jturnbu7@uwo.ca">jturnbu7@uwo.ca</a>
571	R. Valluri	<a href="mailto:valluri@uwo.ca">valluri@uwo.ca</a>
572/573	H. Bae	<a href="mailto:hbae22@uwo.ca">hbae22@uwo.ca</a>

**THIS INFORMATION IS ONLY APPLICABLE FOR THE KING'S SECTIONS OF MATH 1229A.**

**DROP-IN HOURS/Office Hours:** posted to Brightspace

**TEXTBOOK:** *Custom Book: Elementary Linear Algebra, 2nd Edition* by Venit/Bishop/Brown  
SKU: 9781774743652. Available as e-book \$75 and in print \$81.55. You can also use the 1<sup>st</sup> edition.

**CLASS FORMAT**

- Lectures are in-person.
- Quizzes may be conducted online and in-person.
- Tests and exam are in-person.
- Some materials will be posted to Brightspace (Western's online learning platform), and you are expected to access these materials in addition to attending class.
- Attendance in each class is expected. If a student has unexcused absences from class too often, they may be disbarred from writing the final exam (automatic grade of 0).

**TECHNOLOGY REQUIREMENTS**

- Computer or laptop access
- Paper, pencils, and erasers
- *Recommended but not required:* access to a printer.

**PREREQUISITES:**

One or more of Ontario Secondary School MCF3M, MCR3U, Mathematics 0109A/B, or equivalent.

**ANTIREQUISITES:**

Applied Mathematics 2811B, Mathematics 1600A/B, 1700A/B, 2120A/B, 2155F/G, 2211A/B, Numerical and Mathematical Methods 1411A/B, the former mathematics 2155A/B, the former Applied Mathematics 1411A/B.

**COURSE TOPICS:**

Matrix algebra including vectors and matrices, linear equations, determinants.

**LEARNING OUTCOMES:** students will

- Be able to manipulate vector and matrix expressions to accomplish required goals.
- Explore vectors, systems of linear equations and matrices.
- Understand how to determine the nature of solutions for systems of linear equations.
- Be able to calculate quantities from matrices including determinants and inverses.
- Learn how to express and manipulate equations of lines, planes, and hyperplanes.
- Solve application problems using different methods for solving systems of equations.

**OFFICE HOURS:**

What are office hours? See this wonderful explanation from Dr. Ishak at Santa Clara University:

<https://vimeo.com/270014784>

- See the drop-in hours on the course Brightspace page.

**EMAIL:**

- response times vary wildly depending on email volume.
  - sometimes we are fast to respond, other times we are not fast.
- any email sent to an instructor must say **Math 1229A-57X** (with X being correct for your section) in the subject line. This helps categorize your email as “not spam” and give it a higher priority. You do not need to include your student number for regular course inquiries with the instructor.
- Do not “reply” directly to announcements sent from Brightspace. Instead, write a new email to the instructor – this helps ensure that your email is not ignored.
- Do not trust email “autocomplete” to default to your instructor’s email addresses. Type it in. Autocomplete may automatically complete the wrong email address.

**EVALUATION OF STUDENT LEARNING:**

- Quizzes: 20%
  - Online quizzes: 5% total from top 5 of 6 quizzes (1% each)
  - In-class quizzes: 15% from 3 quizzes (5% each)
- In-person Test 1: 15% on Saturday, October 18 from 2:00 – 3:30 PM
- In-person Test 2: 15% on Saturday, November 15 from 2:00 – 3:30 PM
- In-person Final Exam: 40%
- Flex grade: +10% weight applied to your best of test 1, test 2, or final exam

## NOTES:

1. The final exam will be scheduled by the registrar.
2. Test and exam room locations will be announced on Brightspace.
3. In-class quizzes are held during your regularly scheduled class times.
  - a. Your instructor will provide additional details about exact time and date. Quiz A is usually scheduled during the week of test 1, Quiz B during the week of test 2, and Quiz C usually gets scheduled on the last or second-last day of class.
  - b. **Pay special attention to your start and end times for in-class quizzes – they will be announced on Brightspace and in class.**
4. Precise dates of online quizzes will be announced on Brightspace and in class at the start of the term. The online quizzes are asynchronous and open book.

## POLICIES

### Appropriate Use of Learning Environment

- The course web site is hosted on Brightspace. It requires login using your UWO credentials.
- Course materials on the Brightspace page including notes, videos, and related are copyright-protected by the instructor and cannot be distributed
- Uploading of any course materials to websites or social media is strictly forbidden and will result in serious academic sanctions
- Class activities may not be recorded (video or audio) by students. This is to protect the privacy of everyone in attendance.
- Attendance in class is a minimal expectation. We also expect you to be in class without distractions, e.g. doing extraneous things on phones, laptops, Samsung smart fridge, etc. and we expect you to make and/or annotate notes, ask questions, and sometimes answer questions.

### Academic Integrity

- It is expected that all work you submit will be your own.
- Academic integrity policies at Western require that instructors forward to their department chair or director any evidence of academic offenses
- Cheating is taken seriously to protect the integrity of our measures of your learning
- 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](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)
- Tests, quizzes, and exams may be subject to similarity review (by hand or by software) to check for unusual coincidences in answer patterns that may indicate cheating.
- Instructors reserve the right to follow-up with students on all work submitted for grading. This may be for academic integrity purposes and can involve oral examinations in situations where cheating is suspected.

### Assessment Policy

- Your grade in the course is based on your demonstrated understanding of the course content, assessed using the same criteria for all students.
- Extra credit assignments are not available, tests and exams cannot be rewritten.
- Re-weighting to the final exam is not available in this course beyond what has already been described in this course outline.
- This course is run in conjunction with main campus, which means some assessments will be partially or wholly in common for thousands of students in many course sections.

### Missed Work Policy

- **Online quizzes:**
  - There are no makeup quizzes for missed online quizzes. From the six available quizzes, your lowest quiz grade will be dropped, which thus allows you to miss one online quiz without any penalty.
  - Quizzes cannot be completed late – they are strictly due at the indicated deadlines.
- **In-person quizzes:**
  - There are no makeup quizzes for missed in-person quizzes. Without academic consideration or self-reported absence, a grade of 0 will apply. With academic consideration or self-reported absence, the following policy will apply:
    - If you miss quiz A, the 5% weight will apply to test 1
    - If you miss quiz B, the 5% weight will apply to test 2
    - If you miss quiz C, the 5% weight will apply to the final exam
- **Test 1:**
  - If you miss test 1 (with academic consideration or self-reported absence), there will be a makeup test on Friday, October 24 from 2:30 – 4:30 PM.
  - If you then miss the makeup for test 1 (with academic consideration), the weight of test 1 will shift to the final exam. Without academic consideration for missing the makeup test, your test 1 grade will be 0.
- **Test 2:**
  - If you miss test 2 (academic consideration is required; test 2 is NOT ELIGIBLE for self-reported absence), there will be a makeup test on Friday, November 21 from 2:30 – 4:30 PM.
  - If you then miss the makeup for test 2 (with academic consideration), the weight of test 2 will shift to the final exam. Without academic consideration for missing the makeup, your test 2 grade will be 0.
- **Final exam:**
  - If you miss the final exam with academic consideration, a makeup exam will be scheduled for you. Without academic consideration, the missed exam grade is 0.
- **Online makeups are NOT available for any reason.**
- *Students seeking religious accommodation for any coursework must make such requests to academic counselling at least one week in advance (and at least two weeks in advance for final exams). After academic counselling has been contacted, you must then notify*

*your instructor.*

### **Online Quiz Information (for quizzes 1-6)**

- Each online quiz must be completed during its multi-day window. No makeups.
- Online quizzes are open-book, but the questions are designed to be done without need to reference any materials.
- Online quizzes allow multiple attempts; only the best attempt counts for marks
- You are encouraged to complete at least one attempt early within the time window, in case you get busy and forget to do the quiz near to the deadline
- THERE ARE NO MAKEUPS FOR ONLINE QUIZZES IN THIS COURSE.
- **For online quizzes you complete**, if your test grade is higher than its associated quiz grade (see topic table on the next page), then the quiz grade will be replaced by the test grade. **This will NOT apply to grades of zero from missed quizzes.**

### **In-Person Quiz Policy (for quizzes A, B, C)**

- In-person quizzes will be modeled after the provided practice quizzes. They are closed book, and are intended to prepare you for your tests and final exam.
- Your instructor may split your section into two groups, with group 1 writing in the first 40-minutes of class, and group 2 writing afterwards for 40 minutes.
- In-person quiz dates will be announced by your instructor (held during class time).
- There are NO MAKEUPS for in-class quizzes in this course.
- **For in-class quizzes you complete**, if your test grade is higher than its associated quiz grade, then the quiz grade will be replaced by the test grade. **This will NOT apply to grades of zero from missed quizzes.**

### **APPROXIMATE SCHEDULE OF TOPICS (subject to change at instructor discretion)**

Class	Topics	Associated Quiz/Test/Exam
1-2	1.1: Introduction to vectors	Brightspace Quiz 1 / In-class Quiz A / Test 1 / Exam
3-4	1.2: Vector operations	Brightspace Quiz 1 / In-class Quiz A / Test 1 / Exam
5-6	1.3: Lines and planes in 2D	Brightspace Quiz 2 / In-class Quiz A / Test 1 / Exam
7-8	2.1: Lines and planes in 3D+	Brightspace Quiz 2 / In-class Quiz A / Test 1 / Exam
9-10	2.2: Systems of linear equations	Brightspace Quiz 3 / In-class Quiz B / Test 2 / Exam
11-12	2.3: Row reduction	Brightspace Quiz 3 / In-class Quiz B / Test 2 / Exam
13-14	3.1: Matrix algebra	Brightspace Quiz 4 / In-class Quiz B / Test 2 / Exam
15-16	3.2 Inverses	Brightspace Quiz 4 / In-class Quiz B / Test 2 / Exam
17-18	3.3 Theory of linear systems	Brightspace Quiz 5 / In-class Quiz C / Exam
19-20	4.1 Determinants	Brightspace Quiz 5 / In-class Quiz C / Exam
21-22	4.2 Properties of Determinants	Brightspace Quiz 6 / In-class Quiz C / Exam
23-24	4.3 Cramer's Rule and Adjoint	Brightspace Quiz 6 / In-class Quiz C / Exam

At your instructor's discretion, class time may also be spent on review prior to tests or exams.

# KING'S UNIVERSITY COLLEGE

## GENERAL COURSE POLICIES

### 2025-2026

#### **1. Academic Accommodations, Consideration for Absences**

##### **Academic Accommodation (Accessibility)**

Accessibility Services works to ensure that academic programs are accessible to all students, and supports students who may have a condition related to, but not limited to, vision, hearing, mobility, different ways of learning, mental health, chronic illnesses, chronic pain, autism spectrum disorder, ADD/ADHD, and temporary conditions (beyond short-term academic consideration). Accessibility Services provides recommendations for accommodation based on medical documentation or psychological and cognitive assessment. The accommodation policy can be found here [Academic Accommodation for Students with Disabilities](#). Information on Accessibility Services at King's can be found [here](#).

##### **Academic Consideration for Student Absence**

If a student is unable to meet a course requirement due to substantial but temporary extenuating circumstances (medical or compassionate), they should follow the procedures below.

In some cases, where instructors have built flexibility into their assessments, this flexibility will already address consideration needs.

Requests for academic consideration should be directed to the Academic Advising Office of your faculty/college of registration. Requests must be made as soon as possible and no later than 48 hours after the missed assessment.

As a rule, documentation is required for academic consideration. For academic consideration requests on medical grounds, the Student Medical Certificate is available at [https://www.kings.uwo.ca/kings/assets/File/currentStudents/courses\\_enrollment/exams\\_and\\_tests/SMC-Feb-2025.pdf](https://www.kings.uwo.ca/kings/assets/File/currentStudents/courses_enrollment/exams_and_tests/SMC-Feb-2025.pdf).

Students are permitted one academic consideration request without supporting documentation per term per course.

Instructors may designate one assessment per half-course weight as requiring formal supporting documentation. Please refer to the course outline for each course.

For further information, please see:

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/academic\\_consideration\\_Sep24.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf)

##### **Absences from Final Examinations**

If you miss the Final Exam, contact the Academic Advising Office of your faculty/college of registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, or more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under [Special Examinations](#)).

## **Religious Accommodation**

Students should consult the University's list of recognized religious holidays, and should give notice in writing to the instructor and Academic Advising Office if a course requirement will be affected by a religious holiday/observance. Notice must be given as early as possible, and no later than two weeks prior to an examination, and one week prior to a midterm test date. It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

## **2. Support Services**

Accessibility, Counselling and Student Development at King’s University College:

<https://www.kings.uwo.ca/current-students/student-services/>

Students experiencing emotional or mental health distress can access services at King’s University College: <http://www.kings.uwo.ca/current-students/campus-services/student-support-services/personal-counselling/>

Good2talk is a good online and phone 24/7 resource for students and is available in English, Mandarin, and French: <https://good2talk.ca>, 1-866-925-5454

MentalHealth@Western provides a complete list of options about how to obtain help:

[https://www.uwo.ca/health/mental\\_wellbeing/](https://www.uwo.ca/health/mental_wellbeing/)

Academic Support Services at King’s University College:

<https://www.kings.uwo.ca/current-students/academic-resources/>

### **GBSV Support:**

King’s is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at:

<https://www.kings.uwo.ca/about-kings/safe-campus/gender-and-sexual-violence/>

You can reach someone supports at Kings by emailing [Care@kings.uwo.ca](mailto:Care@kings.uwo.ca) or calling 519-930-4640 to reach a social worker who can offer help.

You can also reach Western’s Gender-Based Violence & Survivor Support Case Manager by [email](#) or by calling 519-661-3568.

Further supports can be found on this website: <https://www.kings.uwo.ca/about-kings/safe-campus/gender-and-sexual-violence/>

See also [https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html)

University Students' Council offers many valuable support services for students, including the health insurance plan: <http://westernusc.ca/services/>

### 3. Statement on Use of Electronic Devices

**Use of Electronic Devices:** Unless explicitly stated otherwise, you are not allowed to have a cell phone, or any other electronic device, with you during tests or examinations. Unauthorized possession of such a device during a test or examination constitutes an academic offence.

**Use of Laptops, Tablets, and Smartphones in the Classroom:** King's University College at Western University acknowledges the integration of new technologies and learning methods into the curriculum. The use of electronic devices such as laptop computers, tablets, or smartphones can contribute to student engagement and effective learning. At the same time, King's recognizes that instructors and students share jointly the responsibility to establish and maintain a respectful classroom environment conducive to learning.

The use of electronic devices by students during lectures, seminars, labs, etc., shall be for matters related to the course at hand only. Students found to be using electronic devices for purposes not directly related to the class may be subject to sanctions under the Student Code of Conduct; see <https://www.kings.uwo.ca/current-students/student-affairs/code-of-student-conduct1/>

Inappropriate use of electronics (e.g., laptops, tablets, smartphones) during lectures, seminars, labs, etc., creates a significant disruption. As a consequence, instructors may choose to limit the use of electronic devices in these settings. In addition, in order to provide a safe classroom environment, students attending in-person class sessions are strongly advised to operate laptops with batteries rather than power cords.

### 4. Statement on Academic Offences

King's is committed to academic integrity. Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, is posted at

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf)

It is expected that students will submit work that is truly their own, completed without external assistance (human or artificial) except as explicitly permitted by the course instructor. Check with your instructor on what tools, including generative AI (ChatGPT, translation tools, grammar-checking tools) are permitted in the course. Because a tool is permitted in one course, that does not mean it is permitted in other courses.

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; see <https://elearningtoolkit.uwo.ca/tools/Originality Reports - TurnItIn.html>.

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.

### **5. Copyright of Course Material**

Lectures and course materials, including PowerPoint presentations, tests, outlines, and similar materials are protected by copyright. Faculty members are the exclusive owner of copyright in those materials they create. Students may take notes and make copies for their own use. Students may not allow others to reproduce or distribute lecture notes and course materials publicly (whether or not a fee is charged) without the express written consent of a faculty member. Unauthorized sharing of class content is subject to academic discipline.

Similarly, students own copyright in their own original papers and exam essays. If a faculty member wishes to post a student's answers or papers on the course website, they should ask for the student's written permission.

### **6. Use of Recordings**

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation and/or the participant has the prior written permission of the instructor. Unauthorized recording and/or sharing of class content is subject to academic discipline.

### **7. Policy on Attendance**

Any student who, in the opinion of the instructor, is absent too frequently from class or laboratory periods in any course, will be reported to the Dean of the Faculty offering the course, after due warning has been given. On the recommendation of the department concerned, and with the permission of the Dean of that Faculty, the student will be debarred from taking the regular examination in the course.