



Math1230B 570
Calculus for Social Sciences
Summer 2026

Instructor: Ram Valluri, PhD
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Course Information

Mode of Instruction:

Calendar Description:

Review of differential calculus with transcendental functions; methods of integration; constrained and unconstrained multivariable optimization, with applications; mathematical modelling with differential equations, including applications in management, finance, economics, and social science.

Pre-requisite(s): One or more of Ontario Secondary School MCV4U, Mathematics 0110A/B.

Anti-requisite(s): Applied Mathematics 1201A/B, Calculus 1000A/B, Calculus 1301A/B, Calculus 1500A/B, Calculus 1501A/B, Mathematics 1225A/B, Numerical and Mathematical Methods 1412A/B, Numerical and Mathematical Methods 1414A/B, the former Applied Mathematics 1412A/B, the former Applied Mathematics 1413, the former Applied Mathematics 1414A/B.

Extra Information: 4 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.

KING'S UNIVERSITY COLLEGE
LONDON CANADA
SCHOOL OF MANAGEMENT, ECONOMICS, AND MATHEMATICS

Mathematics 1230B
Calculus for Management, Economics, Finance and Social Science

June – July 2026

Instructor: Dr. Sree Ram Valluri (valluri@uwo.ca)

Section: 570

TEXTBOOK: *Custom Text for Mathematics 0110A/B, 1225A/B and 1230A/B* . E-book(\$70) or print (\$97.95)
Comes in print and e-book formats, with homework solutions book (*any edition is fine*).

Technology requirements: you must have access to a computer or laptop, as well as a web camera and/or smart phone with a camera. This is in addition to the usual math hardware you will need: pencil, paper, and (if you are human), an eraser.

CLASS FORMAT

- Tutorials are conducted synchronously for online students.
- Quizzes are asynchronous online and open book. They must be completed independently and may contain written components you will need to scan and upload, in addition to multiple choice and numerical input.
- Tests are asynchronous and online, closed book, and must be completed independently.
- The final exam will be conducted **in person**. Testing centers have been arranged in London, Toronto, and other places will be announced.
- Office hours will be held over Zoom (Tuesdays and Thursdays), 9:30AM - 11AM. Hours can be extended subject to student questions and attendance. Problems and lessons will be reviewed, as per the students request.
- At the sole discretion of the instructor, you may be questioned about all submitted work, i.e. to verify that you understand what you submitted, to confirm the work is your own.

Dates: This course runs from June 15, 2026, until July 24, 2026 (6 weeks). The final exam will be held within a few days of the end of the course (precise day and time to be announced via OWL Brightspace). The final exam is in person. Students deferring the final exam with academic consideration will have a grade of INC (incomplete) until they write their final exam. This will impact subsequent course registration.

WHAT IS EXPECTED OF THE STUDENT?

- working knowledge of, and any needed review of, all relevant introductory calculus concepts:
 - factoring, expanding (including factoring quadratics, collecting like terms, FOIL, etc)
 - using the laws of exponents, including for fractional exponents
 - knowledge of trigonometric functions, including their evaluation at special angles
 - use of function notation, manipulation of expressions, solving for x
 - derivatives, including power, product, quotient, and chain rules
 - calculus applied to problems in optimization (finding max and min)

- calculus with radical, rational, exponential, and polynomial functions
- regular engagement in learning.
- complete responsibility to follow-up regarding any assessments which are missed.

PREREQUISITES:

One or more of Ontario Secondary School MCV4U, [Mathematics 0110A/B](#).

ANTIREQUISITES:

[Applied Mathematics 1201A/B](#), [Calculus 1000A/B](#), [Calculus 1301A/B](#), [Calculus 1500A/B](#), [Calculus 1501A/B](#), [Mathematics 1225A/B](#), [Numerical and Mathematical Methods 1412A/B](#), [Numerical and Mathematical Methods 1414A/B](#), the former Applied Mathematics 1412A/B, the former Applied Mathematics 1413, the former Applied Mathematics 1414A/B.

COURSE TOPICS:

Review of differential calculus with transcendental functions; methods of integration; constrained and unconstrained multivariable optimization, with applications; mathematical modelling with differential equations, including applications in management, finance, economics, and social science.

LEARNING OUTCOMES: students will

- Apply exponential and log functions to solve problems.
- Use differential calculus to find rates of change and tangent lines.
- Use multivariable calculus to perform constrained and unconstrained optimization.
- Learn basic integral calculus and apply it to find areas under curves.
- Solve first-order differential equations.
- Create and solve models for population and finance problems.

COURSE WEB SITE:

Various supplemental materials, such as practice tests, are posted on the course 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.

INSTRUCTOR CONTACT INSTRUCTIONS:

- Students must use their Western (@uwo.ca) email addresses when contacting the instructor.
- Any email sent to an instructor must say Math 1230B in the subject line. This helps categorize your email as “not spam” and give it a higher priority.
- No need to include your student number in your email (not secure).
- Do not “reply” to announcements. If you have questions, send an email.
- Do not trust email “autocomplete” to default to your instructor’s email address. Type it in. Autocomplete may automatically input the wrong email address.

EVALUATION OF STUDENT PERFORMANCE:

- Quiz (45%): There will be six online (asynchronous) quizzes, but only the best five scores will count toward your final grade. Quiz dates will be announced on Brightspace.
- In person Final Exam (55%): NO calculators or other electronic devices or any other aids are allowed on final exam.
 - Exact address of exam centers and room numbers will be announced closer to the final exam date.
 - Precise dates and times for online quizzes will be announced on Brightspace. The online quizzes are asynchronous and open book. There are no makeup quizzes – you must complete the online quizzes within the specified time window.
 - The Final Exam will be 3 hours in length, covering all the course material
 - You will be required to bring your photo ID/student card to both tests and the final exam.
 - The format of the final exam includes a mixture of multiple choice and show-your-work long format problems.

APPROXIMATE SCHEDULE

Dates	Topics
Week1	Review of exponent laws, functions, exponential functions, log functions, basic derivative rules, exponential and log derivatives, and optimization (one variable).
Week 2	multivariable function, partial derivatives, Second partial derivatives, Critical points for multivariable function, Classification of critical points using partial 2nd derivative test(D-test),
Week 3	Lagrange functions, Constrained optimization, Sigma Notation, Geometric Series
Week 4	Anti-differentiation, Integration by substitution, Integration of piecewise functions, Area between two curves
Week 5	Integration of piecewise functions, Area between two curves, Integration by parts, and Improper Integral, Probability density function, Expected value, Initial value problems
Week 6	Separable differential equations, Linear first order differential equations, Mathematical Model building (from word problems) and solving mathematical models

To help you prepare, practice tests and practice exams are available on the course OWL page.

Quizzes will be based on the assignment homework and examples done in the lessons.

Your mark in the course will be the mark that you earn based on your demonstrated understanding of the course content, assessed using the outlined criteria. Extra credit assignments are not available, and tests and exams cannot be rewritten to obtain a higher mark.

“OPEN NOTE” TESTING FORMAT

- For the final exam, you can bring up to 2 handwritten pages of anything (both sides). No photocopies, no printouts. It can be formulas, fully solved examples, poetry, an outline of your hand, a hand-drawn sketch of a cat, etc. It must be submitted with your test (and will be returned later)
- You cannot share your formula sheets during the exam.
- If you forget your formula sheets, just pretend you meant to show off and write the test or without any formula pages. It is just less awkward that way and has the same outcome.

- Open-note format is dangerous because it invites you to run out of time. If you don't understand what is on your sheets, they are basically going to be useless to you.

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 a student does not complete a quiz within that time, the grade is zero. There are no makeup quizzes. If students obtain academic consideration, the weight is transferred to the final exam.

If students miss the final exam with formal academic consideration, a makeup exam will be scheduled. Online makeups are NOT available for any reason. Without academic consideration, missing the final exam will result in an exam grade of zero.

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.

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://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Note: class work grades (quizzes, assignments, participation) cannot substitute for test or exam grades, and test grades cannot substitute for the exam grade.

OTHER 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.

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
- Tests 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.

Notes about assessment format

- This is an introductory course in calculus that primarily prepares students for further study of calculus in math 1225A/B and math 1230A/B. It is also preparatory for calculus 1000A/B and calculus 1500A, though students heading into those higher-level calculus courses will also need to independently review trigonometry.
 - That this course creates a pathway to calculus 1000A/B and 1500A means we must maintain a high standard, which is reflected in the assessment format.
- Tests are in-person, proctored, closed book, no calculator.
- Practice tests and exams are available on Brightspace and are extremely helpful preparation.

Your mark in the course will be the mark that you earn based on your demonstrated understanding of the course content, assessed using the outlined criteria. Extra credit assignments are not available, and tests and exams cannot be rewritten to obtain a higher mark.

A COMMENT ON LEARNING MATHEMATICS

There are many reasons to learn math. Here are three good reasons.

1. It is a language and set of structures that allow us to efficiently discuss, model, and explain reality. So, for some people, learning mathematics is about being able to perform specific operations and procedures for applications. People heading to professional routes that use mathematics (engineering, computer science, economics, finance, physics, actuarial science, etc.) can justify the effort needed in terms of direct utility. This concept of mathematics also aligns with its placement in the sciences, especially as it relates to developments in applied mathematics, statistics, data science, theoretical physics, and astrophysics. In recent years, mathematics increasingly encroaches in the managerial and social sciences as well, especially economics, business, analytics, finance, and quantitative-subdisciplines within psychology and sociology.
2. It provides a form of intellectual exercise that enhances our ability to solve (mathematical *and* non-mathematical) problems, think creatively, argue concisely, and navigate challenges that may not even superficially resemble mathematics. In these ways, mathematics provides an intellectual exercise akin to exercises performed as training for a sport. With physical training, there may be resentment toward running laps or lifting weights because the connection to playing soccer or baseball may be harder to see. It is no different with mathematical training; the frequent laments about inapplicability of mathematics to life or to a particular career are overlooking this aspect of mathematical training.
3. Mathematics pursues truths that are independent of any direct or indirect utility. For example, a formally proven mathematical theorem is a forever-concluded matter (i.e., not subject to scientific revision or sociopolitical reimagination), and few other areas of human inquiry enjoy this feature. The pursuit of truth and even beauty within mathematics is why the discipline can also be thought of as an art, albeit a very precise one.

SUPPORT SERVICES

Office of the Registrar

UWO

<http://www.registrar.uwo.ca>

King's

<http://www.kings.uwo.ca/academics/academic-deans-office/>

Student Development Services

<http://www.sdc.uwo.ca/>

Learning Skills Services

<http://www.sdc.uwo.ca/learning>

USC

<http://westernusc.ca/your-services>

Academic Calendar

<http://www.westerncalendar.uwo.ca/>

WTS

<https://wts.uwo.ca/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/>

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 [here](#).

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://mykings.ca/intranet/app/#/academics/academic-advising/academic-consideration-requests-and-student-absence-portal>

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 https://academicsupport.uwo.ca/accessible_education/exams/index.html.

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://mykings.ca/intranet/app/#/student-supports-and-services>

Students experiencing emotional or mental health distress can access services at King's University College: <https://mykings.ca/intranet/app/#/student-supports-and-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/psych/index.html>

Academic Support Services at King's University College:

<https://mykings.ca/intranet/app/#/academics/academic-advising>

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://mykings.ca/intranet/app/#/student-supports-and-services/campus-safety-and-reporting/gender-and-sexual-violence>

You can reach someone supports at Kings by emailing 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.

See also 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://mykings.ca/intranet/app/#/student-supports-and-services/campus-safety-and-reporting/student-code-of-conduct>

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 [here](#).

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 you 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/OriginalityReports-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.