

**Calculus 2402A Fall 2020**  
**Calculus with Analysis for Statistics**

**Instructor:** Khoa Nguyen, MC 282, 519-661-2111 x88799, [knguyen@uwo.ca](mailto:knguyen@uwo.ca)

**Office Hours:** Thursday 1:00pm-2:00pm or TBA via Zoom.

**Lectures:** MWF 1:30pm-2:30pm.

In the event of COVID-19 pandemic, all lectures of this course will be delivered online through ZOOM. The lectures will be asynchronously recorded and posted on OWL on these days every week.

The recordings are not permitted to disclose to anyone else without prior permission from the instructor.

**Website:** Course announcements, material and information will be posted on <https://owl.uwo.ca>. Students must use their Western (@uwo.ca) email addresses when contacting their instructor.

**Pre-requisite:** Calculus 1301A/B or 1501A/B or Applied Mathematics 1413, in each case with a minimum mark of 55%.

It is your responsibility to ensure that the course prerequisite has been successfully completed or that special permission from the Dean has been obtained. Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you will 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.

**Anti-requisite:** Calculus 2302A/B, Calculus 2502A/B or the former Applied Mathematics 290a.

**Required Text:** James Stewart (2016), *Multivariable Calculus, 8th Edition*, Brooks-Cole, ISBN 978-1-305-26664-3 and **WebAssign Printed Access Card 9780357008041** or the single-term electronic version, ISBN **9781337771399**.

**Description:** Functions of multiple variables and their differential calculus. The gradient and the Hessian. Constrained and unconstrained optimization of scalar-valued functions of many variables: Lagrange multipliers. Multidimensional Taylor series. Integrating scalar-valued functions of several variables: Jacobian transformations. Pointwise and uniform convergence. Power series.

**Evaluation:**

30% Assignments (approximately one every two weeks)

35% Midterm Exam-Tentatively, Saturday October 24, 2020 (2:00 pm-5:00 pm) online with Proctortrack.

35% Final Exam. The final exam is scheduled by the Registrar Office during the exam period and is conducted by Proctortrack.

Exams in this course will be conducted using the remote proctoring service, Proctortrack. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. More information about this remote proctoring service is available in the Online Proctoring Guidelines at the following link:

<https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf>

Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. Information about the technical requirements are available at the following link:

<https://www.proctortrack.com/tech-requirements/>

**Assignments:** approximately one every two weeks.

Please note that all material in the lecture up to the end of the course can be considered testable.

**Calculators:** Only non-programmable calculator may be used for all evaluations. No other electronic devices such as PDAs, cell phones, etc., will be allowed.

### Objectives:

At the end of the courses, a student should be able to:

- Investigate functions of two or more variables.
- Write an equation of a tangent plane and normal line to a surface at a given point.
- Use the Chain Rule for functions of several variables.
- Obtain the gradient and directional derivatives of a function of several variables.
- Write a Taylor expansion and Hessian of a function of two variables.
- Find extreme values of a function of several variables by using Lagrange multiplier.
- Calculate double integrals, triple integrals in several coordinate systems.
- Apply the methods of functions of several variables to physics, probability and geometry.
- Compute the Jacobian of a transformation in a double or triple integral.
- Distinguish the concepts of Pointwise and Uniform Convergence.

### Statements concerning Online Etiquette

Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- Please “arrive” at class on time.
- Please use your computer and/or laptop if possible (as opposed to a cell phone or tablet).
- Ensure that you are in a private location to protect the confidentiality of discussion in the event that a class discussion deals with sensitive or personal material.
- To minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise.
- In order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak.
- Please be prepared to turn your video camera off at the instructor’s request if the internet connection becomes unstable.
- Unless invited by your instructor, do **not** share your screen in the meeting.

The course instructor/TA will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- If you wish to speak, use the “right hand” function and wait for the instructor to acknowledge you before beginning your comment or question.
- Remember to mute your mic and turn off your video camera after speaking (unless directed otherwise).

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the other students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

**Medical Issues:** If a student is unable to meet a course requirement due to illness or other serious circumstances, the student must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact his or her 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.

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.

**Missed Evaluations:** If you have a conflict, please contact me with appropriate written documentation, if at all possible prior to the evaluation.

**Plagiarism and Scholastic Offences:** Students must write their own essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt 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).

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

**Accessibility Statement:** Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to

you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

**Mental Health Statement:** Student who are in emotional/mental distress should refer to Mental Health@ Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.