



# MATH\*1030 Business Mathematics

Summer 2023

Section: DE01

Department of Mathematics and Statistics

Credit Weight: 0.50

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## Course Details

### Calendar Description

Primarily intended for business and economics students, this course is designed to introduce and reinforce the essential mathematical skills needed to understand, analyze, and solve mathematical problems related to business and economics. Topics covered include basic algebra; functions, including a review of exponential and logarithmic functions; sequences and series with financial applications; limits; continuity; and differential calculus including derivatives, higher order derivatives, and curve sketching.

**Pre-Requisite(s):** 4U Advanced Functions

**Co-Requisite(s):** None

**Restriction(s):** MATH\*1080, MATH\*1200 Not available to students registered in the BSC program.

**Method of Delivery:** Distance Education (asynchronous online)

### Take Home Final Exam

**Release Date and Time:** Monday, August 7, 2023 at 10:00 am ET

**Submission Due Date and Time:** Friday, August 11, 2023 by 10:00 pm ET

**Location:** Take-home final exam to be submitted via the **Dropbox** tool in CourseLink

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## Instructional Support

### Instructor

**Christopher van Bommel**

**Email:** [cvanbomm@uoguelph.ca](mailto:cvanbomm@uoguelph.ca)

**Telephone:** (519) 824-4120 Ext. 52607

**Office:** MACN 524

**Office Hours via Microsoft Teams:** Students may opt to drop into office hours on Tuesdays from 3:30 pm EDT to 4:30 pm EDT beginning on May 16. Please note that further details will be posted in the **Announcements**. See also **Communicating with Your Instructor**.

### Teaching Assistant(s)

**Name:** TBD

**Email:** TBD

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## Learning Resources

### Required Textbook

There is no required textbook for this course.

### Course Website

[CourseLink](#) (powered by D2L's Brightspace) is the course website and will act as your classroom. It is recommended that you log in to your course website every day to check for announcements, access course materials, and review the weekly schedule and assignment requirements.

<https://courselink.uoguelph.ca>

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## Learning Outcomes

### Course Learning Outcomes

This course is designed for students interested in the application of mathematics in a business setting. Some of the topics covered include: the role of mathematics in business decisions; a review of basic algebra; methods of solving equations;

sequences, series, and limits, and their application to finance; an introduction to derivatives and integrals; and systems of linear equations.

By the end of this course, you should be able to:

1. Use basic algebra to simplify and manipulate algebraic equations;
2. Describe and manipulate elementary functions, including logarithmic functions, exponential functions, and linear, quadratic, and higher order polynomials;
3. Sketch, identify, and interpret a wide variety of graphs;
4. Construct and solve systems of linear equations derived from worded descriptions;
5. Interpret the meaning of a limit, and be able to calculate limits involving simple functions and sequences;
6. Describe the differences between sequences and series, and use formulas resulting from finite and infinite series to solve problems involving payments, deposits, and interest rates;
7. Explain the geometric and practical meanings of a derivative, find derivatives of functions, and use derivatives to solve optimization problems; and
8. Apply the mathematical methods covered in the course to solve real-world problems in finance, business, and economics.

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## Teaching and Learning Activities

### Course Structure

This course is divided into 12 units of study:

- Unit 01: Review of Algebra
- Unit 02: Linear Equations
- Unit 03: Quadratic and Higher Order Polynomial Equations
- Unit 04: Exponentials and Logarithms
- Unit 05: Systems of Linear Equations
- Unit 06: Sequences
- Unit 07: Series
- Unit 08: Applications to Finance
- Unit 09: Limits and Continuity
- Unit 10: Derivatives
- Unit 11: Curve Sketching

- Unit 12: Optimization

## Schedule

It is strongly recommended that you follow the course schedule provided below. The schedule outlines what you should be working on each week of the course and lists the important due dates for the assessments. By following the schedule, you will be better prepared to complete the assessments and succeed in this course.

### Unit 01: Review of Algebra

#### Week 1 - Thursday, May 11 to Sunday, May 21

##### Readings

- CourseLink: Unit 01 Notes

##### Activities

- Familiarize yourself with the course website by selecting **Start Here** on the navbar.
- Review **Outline** and **Assessments** on the course website to learn about course expectations, assessments, and due dates.
- Complete Unit 01 Exercises

### Unit 02: Linear Equations

#### Week 2 - Monday, May 22 to Sunday, May 28

##### Readings

- CourseLink: Unit 02 Notes

##### Activities

- Complete Unit 02 Exercises

##### Assessments

- **Quiz 1** (Unit 01)  
Opens: Thursday, May 25 at 12:00 pm ET  
Closes: Sunday, May 28 at 11:59 pm ET

### Unit 03: Quadratic and Higher Order Polynomial Equations

#### Week 3 – Monday, May 29 to Sunday, June 4

##### Readings

- CourseLink: Unit 03 Notes

### **Activities**

- Complete Unit 03 Exercises

### **Assessments**

- **Quiz 2** (Unit 02)  
Opens: Thursday, June 1 at 12:00 pm ET  
Closes: Sunday, June 4 at 11:59 pm ET

## **Unit 04: Exponentials and Logarithms**

### **Week 4 – Monday, June 5 to Sunday, June 11**

#### **Readings**

- CourseLink: Unit 04 Notes

#### **Activities**

- Complete Unit 04 Exercises

#### **Assessments**

- **Quiz 3** (Unit 03)  
Opens: Thursday, June 8 at 12:00 pm ET  
Closes: Sunday, June 11 at 11:59 pm ET

## **Unit 05: Systems of Linear Equations**

### **Week 5 – Monday, June 12 to Sunday, June 18**

#### **Readings**

- CourseLink: Unit 05 Notes

#### **Activities**

- Complete Unit 05 Exercises

#### **Assessments**

- **Quiz 4** (Unit 04)  
Opens: Thursday, June 15 at 12:00 pm ET  
Closes: Sunday, June 18 at 11:59 pm ET

## **Unit 06: Sequences**

### **Week 6 – Monday, June 19 to Sunday, June 25**

#### **Readings**

- CourseLink: Unit 06 Notes

#### **Activities**

- Complete Unit 06 Exercises

### **Assessments**

- **Quiz 5** (Unit 05)  
Opens: Thursday, June 22 at 12:00 pm ET  
Closes: Sunday, June 25 at 11:59 pm ET

## **Unit 07: Series**

### **Week 7 – Monday, June 26 to Sunday, July 2**

#### **Readings**

- CourseLink: Unit 07 Notes

#### **Activities**

- Complete Unit 07 Exercises

#### **Assessments**

- **Quiz 6** (Unit 06)  
Opens: Thursday, June 29 at 12:00 pm ET  
Closes: Sunday, July 2 at 11:59 pm ET

## **Unit 08: Applications to Finance**

### **Week 8 – Monday, July 3 to Sunday, July 9**

#### **Readings**

- CourseLink: Unit 08 Notes

#### **Activities**

- Complete Unit 08 Exercises

#### **Assessments**

- **Quiz 7** (Unit 07)  
Opens: Thursday, July 6 at 12:00 pm ET  
Closes: Sunday, July 9 at 11:59 pm ET

## **Unit 09: Limits and Continuity**

### **Week 9 – Monday, July 10 to Sunday, July 16**

#### **Readings**

- CourseLink: Unit 09 Notes

#### **Activities**

- Complete Unit 09 Exercises

## Assessments

- **Quiz 8** (Unit 08)  
Opens: Thursday, July 13 at 12:00 pm ET  
Closes: Sunday, July 16 at 11:59 pm ET

## Unit 10: Derivatives

### Week 10 – Monday, July 17 to Sunday, July 23

#### Readings

- CourseLink: Unit 10 Notes

#### Activities

- Complete Unit 10 Exercises

#### Assessments

- **Quiz 09** (Unit 09)  
Opens: Thursday, July 20 at 12:00 pm ET  
Closes: Sunday, July 23 at 11:59 pm ET

## Unit 11: Curve Sketching

### Week 11 – Monday, July 24 to Sunday, July 30

#### Readings

- CourseLink: Unit 11 Notes

#### Activities

- Complete Unit 11 Exercises

#### Assessments

- **Quiz 10** (Unit 10)  
Opens: Thursday, July 27 at 12:00 pm ET  
Closes: Sunday, July 30 at 11:59 pm ET

## Unit 12: Optimization

### Week 12 – Monday, July 31 to Friday, August 4

#### Readings

- CourseLink: Unit 12 Notes

#### Activities

- Complete Unit 12 Exercises

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## Assessments

The grade determination for this course is indicated in the following table. A brief description of each assessment is provided below. Select **Content** on the navbar to locate **Assessments** in the table of contents panel to review further details of each assessment. Due dates can be found under the Schedule heading of this outline.

**Table 1: Course Assessments**

<b>Assessment Item</b>	<b>Weight</b>
Quizzes (Best 9 out of 10)	50%
Final Exam	50%
<b>Total</b>	<b>100%</b>

### Assessment Descriptions

#### Quizzes

There will be 10 online quizzes occurring in weeks 2–11.

#### Final Exam

This course requires you to submit a take-home final exam to the **Dropbox** tool in CourseLink. Select **Content** on the navbar to locate **Assessments** in the table of contents panel to review further details of the final exam.

**Note:** You must achieve a passing grade in the Final Examination in order to pass this course. If your Final Examination grade is below 50% it will be your final grade in this course. For example, if you get 43% on the Final Examination, you will get 43% in this course – no matter how well you do in your quizzes.

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## Course Technology Requirements and Technical Support

### CourseLink System Requirements

You are responsible for ensuring that your computer system meets the necessary [system requirements](#). Use the [browser check](#) tool to ensure your browser settings are compatible and up to date. (Results will be displayed in a new browser window).

<https://opened.uoguelph.ca/student-resources/system-and-software-requirements>

<https://courselink.uoguelph.ca/d2l/systemCheck>

## Microsoft Teams Requirements

This course may use Microsoft Teams as a video communication tool. A Webcam, a microphone, and headphones/speakers may be needed. Review [System requirements for Teams for personal use \(microsoft.com\)](https://support.microsoft.com/en-us/office/system-requirements-for-teams-for-personal-use-dae0234b-839c-4f85-ae75-d14ad2baa978) to ensure that your computer meets the technical requirements.

<https://support.microsoft.com/en-us/office/system-requirements-for-teams-for-personal-use-dae0234b-839c-4f85-ae75-d14ad2baa978>

## Technical Skills

As part of your online experience, you are expected to use a variety of technology as part of your learning:

- Manage files and folders on your computer (e.g., save, name, copy, backup, rename, delete, and check properties);
- Install software, security, and virus protection;
- Use office applications (e.g., Word, PowerPoint, Excel, or similar) to create documents;
- Be comfortable uploading and downloading saved files;
- Communicate using email (e.g., create, receive, reply, print, send, download, and open attachments);
- Navigate the CourseLink learning environment and use the essential tools, such as **Quizzes**, **Discussions**, and **Grades** (the instructions for this are given in your course);
- Access, navigate, and search the Internet using a web browser (e.g., Firefox, Internet Explorer); and
- Perform online research using various search engines (e.g., Google) and library databases.

## Technical Support

If you need any assistance with the software tools or the CourseLink website, contact CourseLink Support.

### CourseLink Support

University of Guelph

Day Hall, Room 211

Email: [courselink@uoguelph.ca](mailto:courselink@uoguelph.ca)

Tel: 519-824-4120 ext. 56939

Toll-Free (CAN/USA): 1-866-275-1478

### Walk-In Hours (Eastern Time):

Monday thru Friday: 8:30 am–4:30 pm

**Phone/Email Hours (Eastern Time):**

Monday thru Friday: 8:30 am–8:30 pm

Saturday: 10:00 am–4:00 pm

Sunday: 12:00 pm–6:00 pm

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## Course Specific Standard Statements

### Acceptable Use

The University of Guelph has an [Acceptable Use Policy](#), which you are expected to adhere to.

<https://www.uoguelph.ca/ccs/infosec/aup>

### Communicating with Your Instructor

During the course, your instructor will interact with you on various course matters on the course website using the following ways of communication:

- **Announcements:** The instructor will use **Announcements** on the Course Home page to provide you with course reminders and updates. Please check this section frequently for course updates from your instructor.
- **Ask Your Instructor Discussion:** Use this discussion forum to ask questions of your instructor about content or course-related issues with which you are unfamiliar. If you encounter difficulties, the instructor is here to help you. Please post general course-related questions to the discussion forum so that all students have an opportunity to review the response. To access this discussion forum, select **Discussions** from the **Tools** dropdown menu.
- **Email:** If you have a conflict that prevents you from completing course requirements, or have a question concerning a personal matter, you can send your instructor a private message by email. The instructor will respond to your email within 72 hours.
- **Online meeting:** If you have a complex question you would like to discuss with your instructor, you may book an online meeting. Online meetings depend on the availability of you and the instructor, and are booked on a first come first served basis.

### Netiquette Expectations

For distance education courses, the course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply, plus other policies and considerations that come into play specifically because these courses are online.

Inappropriate online behaviour will not be tolerated. Examples of inappropriate online behaviour include:

- Posting inflammatory messages about your instructor or fellow students;
- Using obscene or offensive language online;
- Copying or presenting someone else's work as your own;
- Adapting information from the Internet without using proper citations or references;
- Buying or selling term papers or assignments;
- Posting or selling course materials to course notes websites;
- Having someone else complete your quiz or completing a quiz for/with another student;
- Stating false claims about lost quiz answers or other assignment submissions;
- Threatening or harassing a student or instructor online;
- Discriminating against fellow students, instructors, and/or TAs;
- Using the course website to promote profit-driven products or services;
- Attempting to compromise the security or functionality of the learning management system;
- Sharing your username and password; and
- Recording lectures without the permission of the instructor.

## **Late Policy**

Extensions will be considered for medical reasons or other extenuating circumstances. If you require an extension, discuss this with the instructor as soon as possible and well before the due date. Barring exceptional circumstances, extensions will not be granted once the due date has passed. These rules are not designed to be arbitrary, nor are they inflexible. They are designed to keep you organized, to ensure that all students have the same amount of time to work on assignments, and to help to return marked materials to you in the shortest possible time.

## **Obtaining Grades and Feedback**

Unofficial assessment marks will be available in the **Grades** tool of the course website.

Your instructor will have grades posted online within 2 weeks of the submission deadline, if the assignment was submitted on time. Once your assignments are marked you can view your grades on the course website by selecting **Grades** from the **Tools** dropdown menu on the navbar. Your course will remain open to you for seven days following the last day of the final exam period.

University of Guelph degree students can access their final grade by logging into [WebAdvisor](#) (using your U of G central ID). Open Learning program students should log in to the [OpenEd Student Portal](#) to view their final grade (using the same username and password you have been using for your courses).

<https://www.uoguelph.ca/webadvisor>

<https://courses.opened.uoguelph.ca/portal/logon.do?method=load>

## **Rights and Responsibilities When Learning Online**

For distance education (DE) courses, the course website is considered the classroom and the same protections, expectations, guidelines, and regulations used in face-to-face settings apply, plus other policies and considerations that come into play specifically because these courses are online.

For more information on your rights and responsibilities when learning in the online environment, visit [Rights and Responsibilities](#).

<http://opened.uoguelph.ca/student-resources/rights-and-responsibilities>

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## **University Standard Statements**

### **University of Guelph: Undergraduate Policies**

As a student of the University of Guelph, it is important for you to understand your rights and responsibilities and the academic rules and regulations that you must abide by.

If you are a registered **University of Guelph Degree Student**, consult the [Undergraduate Calendar](#) for the rules, regulations, curricula, programs and fees for current and previous academic years.

If you are an **Open Learning Program Student**, consult the [Open Learning Program Calendar](#) for information about University of Guelph administrative policies, procedures and services.

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/>

<http://opened.uoguelph.ca/student-resources/open-learning-program-calendar>

### **Email Communication**

As per university regulations, all students are required to check their uoguelph.ca e-mail account regularly: e-mail is the official route of communication between the University and its students.

### **When You Cannot Meet Course Requirements**

When you find yourself unable to meet an in-course requirement due to illness or compassionate reasons, please advise your course instructor **in writing**, with your name, ID number and email contact.

### **University of Guelph Degree Students**

Consult the [Undergraduate Calendar](#) for information on regulations and procedures for Academic Consideration.

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

### **Open Learning Program Students**

Please refer to the [Open Learning Program Calendar](#) for information on regulations and procedures for requesting Academic Consideration.

<http://opened.uoguelph.ca/student-resources/open-learning-program-calendar>

### **Drop Date**

#### **University of Guelph Degree Students**

Students will have until the last day of classes to drop courses without academic penalty. [Review the Undergraduate Calendar for regulations and procedures for Dropping Courses.](#)

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

#### **Open Learning Program Students**

Please refer to the [Open Learning Program Calendar](#).

<http://opened.uoguelph.ca/student-resources/open-learning-program-calendar>

### **Copies of Assignments**

Keep paper and/or other reliable back-up copies of all assignments: you may be asked to resubmit work at any time.

### **Accessibility**

#### **University of Guelph Degree Students**

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For more information, contact Accessibility Services at 519-824-4120 ext. 56208, [email Accessibility Services](mailto:accessibility@uoguelph.ca) or visit the [Accessibility Services website](https://wellness.uoguelph.ca/accessibility/).

[accessibility@uoguelph.ca](mailto:accessibility@uoguelph.ca)

<https://wellness.uoguelph.ca/accessibility/>

### **Open Learning Program Students**

If you are an Open Learning program student who requires academic accommodation, please [contact the Academic Assistant to the Executive Director](#). Please ensure that you contact us before the end of the first week of your course (every semester) in order to avoid any delays in support. Documentation from a health professional is required for all academic accommodations. Please note that all information provided will be held in confidence.

If you require textbooks produced in an alternate format (e.g., DAISY, Braille, large print or eText), please [contact the Academic Assistant to the Executive Director](#) at least two months prior to the course start date. If contact is not made within the suggested time frame, support may be delayed. It is recommended that you refer to the course outline before beginning your course in order to determine the required readings.

The provision of academic accommodation is a shared responsibility between OpenEd and the student requesting accommodation. It is recognized that academic accommodations are intended to “level the playing field” for students with disabilities.

[jessica.martin@uoguelph.ca](mailto:jessica.martin@uoguelph.ca)

### **Academic Misconduct**

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part

could be construed as an academic offence should consult with a faculty member or faculty advisor.

The [Academic Misconduct Policy](#) is detailed in the Undergraduate Calendar.

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

## **Copyright Notice**

Content within this course is copyright protected. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course, or have been copied under an exception or limitation in Canadian Copyright law.

The fair dealing exemption in Canada's Copyright Act permits students to reproduce short excerpts from copyright-protected materials for purposes such as research, education, private study, criticism and review, with proper attribution. Any other copying, communicating, or distribution of any content provided in this course, except as permitted by law, may be an infringement of copyright if done without proper license or the consent of the copyright owner. Examples of infringing uses of copyrighted works would include uploading materials to a commercial third party web site, or making paper or electronic reproductions of all, or a substantial part, of works such as textbooks for commercial purposes.

Students who upload to CourseLink copyrighted materials such as book chapters, journal articles, or materials taken from the Internet, must ensure that they comply with Canadian Copyright law or with the terms of the University's electronic resource licenses.

For more information about students' rights and obligations with respect to copyrighted works, review [Fair Dealing Guidance for Students](#).

[http://www.lib.uoguelph.ca/sites/default/files/fair\\_dealing\\_policy\\_0.pdf](http://www.lib.uoguelph.ca/sites/default/files/fair_dealing_policy_0.pdf)

## **Plagiarism Detection Software**

Students should be aware that faculty have the right to use software to aid in the detection of plagiarism or copying and to examine students orally on submitted work. For students found guilty of academic misconduct, serious penalties, up to and including suspension or expulsion from the University can be imposed.

## **Recording of Materials**

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## **Disclaimer**

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the [COVID-19 website](#) and circulated by email.

<https://news.uoguelph.ca/2019-novel-coronavirus-information/>

## **Illness**

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

## **Covid-19 Safety Protocols**

For information on current safety protocols, follow these links:

[How U of G Is Preparing for Your Safe Return](#)

[Guidelines to Safely Navigate U of G Spaces](#)

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

<https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>

<https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>