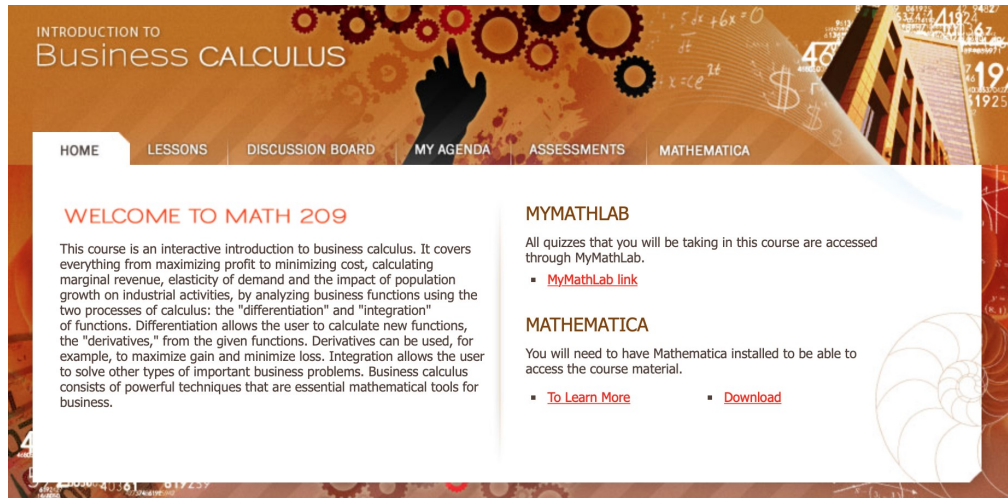


EC Math 209 Course Outline

WINTER 2022



ABOUT THIS COURSE

The eConcordia version of Math 209 is an interactive technology-oriented form of teaching and learning. It helps you learn faster and understand the course material better in less time once you have mastered the basics of the required software and have learned to navigate your way through the structure of the website.

The course material is written in Mathematica, a modern technical computing system spanning most areas of technical computing. The Wolfram Language is the programming language used in Mathematica.

Concordia University has a site license for Mathematica, and you need to download, install, and activate Mathematica to be able to follow and enjoy this course. A browser-based "online" version of Mathematica is also available. The activation code for Mathematica is your Concordia e-mail address. No other e-mail address will do. The Mathematica software is provided free-of-charge to all registered students.

The Mathematica Companion (Revised Third Edition) is the associated textbook that illustrates the required features of Mathematica in this course. Problems in the assignments, quizzes, and the midterm examination should be solved with Mathematica and with the help of the Mathematica Companion.

The problem sets in the eConcordia version of this course use randomized questions from MyLab | Math, together with problems based on the Mathematica Companion, and you must copy your solutions into the MyLab | Math assessment templates provided in your particular course version of MyLab | Math. A direct internal link from eConcordia to MyLab | Math is provided for this purpose.

The Assessment and Discussion Board sections of the course website are your gateway to collaboration with your fellow students and to obtain support from your teaching assistants. Since eConcordia courses are meant to be accessible to students at anytime from anywhere, they have no face-to-face office hours. It is therefore essential that you check the posted material, as well as announcements regularly for information and assistance.

The instructors, the teaching assistants, and I have worked hard and are continuing to work creatively and consistently to make this course an enjoyable and successful learning environment. From time to time, we appreciate your comments and feedback as you perfect your knowledge of mathematics and expand your mathematical toolbox and skills required for the careers you are hoping to follow.

Good luck and have fun.

Dr. Fred E Szabo, Course Examiner for EC MATH 208 and 209

COURSE INSTRUCTOR

Harry Greenspan

Please email your instructor at math209@econcordia.com if you have general or personal inquiries, or if there is a delay in hearing back from your TA.

Remember to always include the following information in all your email messages (as stated in the "Communications" section below).

Your e-mail messages must include the following information:

- Your full name
- Your Concordia University e-mail address
- Your Concordia University Student ID
- Your course name and number pertaining to your inquiry

TEACHING ASSISTANTS

Due to the large number of students enrolled in this course, you will be assigned a Teaching Assistant (TA) by week 2. Their contact info (email address) will be posted on your eConcordia homepage.

Please allow for a 24-hour response time during the week (Monday-Friday). Teaching assistants check their messages regularly and at least once over a 48-hour weekend period. However, they are not available on statutory or university holidays.

Teaching assistants will help you with your studies. However, they are not required to provide technical assistance or to solve hardware and software problems you may encounter. Their main support is through Announcements, the Discussion Board, and individual e-mail communications. So please check the Announcement and Discussion Board sections frequently. Unfortunately, the system does not support automatic notifications of new postings on the Discussion Board.

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COURSE REQUIREMENTS

In order to follow this course, you require a Concordia e-mail address, a computer running the Mathematica software, electronic access to MyLab | Math, and electronic access to the eConcordia website for this course. The procedure for obtaining a Concordia e-mail address is described on your MyConcordia portal.

The process for downloading, installing, and activating Mathematica is also described on your MyConcordia portal. Concordia University supports a site license for the Mathematica software published by Wolfram Research. Mathematica comes in two flavours: computer-based and web-based. Both versions require a Concordia e-mail address as the activation tool. MyLab | Math is integrated into the eConcordia registration process.

The Mathematica Companion for Finite Mathematics and Business Calculus can be purchased directly from the publisher Kendall-Hunt using the following instructions:

Mathematica Companion

To purchase the Mathematica Companion (in eBook form), click on the following link. It will take you straight to the publisher:

[Kendall Hunt publisher of the *Mathematica* Companion](#)

Calculators and Calculator Stickers

To find out which hand-held calculators are allowed in the pencil-and-paper final examination in this course, click on the following link (Note: exceptionally this semester the final exam will be online):

[Permitted Calculators and Calculator Stickers](#)

Course material

The course material for Math 209 is based on four sources:

1. The posted study material on the course website, developed and written in Mathematica.
2. The supporting study material in the Mathematica Companion.
3. Various versions of the **textbook** “Calculus for Business, Economics, Life Sciences, and Social Sciences by Barnett, Ziegler, and Byleen,” a Pearson Education publication.
4. The latest electronic version of the **textbook** is available from within MyLab | Math, the learning environment in which all assignments, quizzes, and online examinations in this course are held.

ONLINE STUDY

The objective of the online version of Math 209 is to use technology to make mathematics more learnable, more accessible, and more enjoyable by reducing the time you need to spend on routine manipulations and allowing you to use the gained time to concentrate on the concepts, the context, and the relevant examples in the course material you are required to learn.

The mathematical software used in Math 209 is Mathematica, one of the most powerful and pedagogically rewarding online teaching and learning tool. The software runs both on Windows and MacOS based computers.

Concordia University has a site license for Mathematica and you can therefore use Mathematica without charge if you are a registered Concordia student.

The dictionary-like Mathematica Companion assigned as a reference text in this course illustrates all required Mathematica calculations.

Practical advice for learning and doing mathematics with technology

- Required MyLab | Math Assessment Answer Format.
- Please read the questions and instructions carefully and make sure you know how to input the proper format such as interval notation in MyLab | Math.
- It is your responsibility to ensure that the format of your answer is according to the standards of MyLab | Math.

- Answers which have been marked incorrect only because of formatting issues will not be reconsidered.

COMMUNICATIONS

E-mail Messages

You will be communicating with your Teaching Assistant, Instructor, and eConcordia via e-mail. Your e-mail address must be registered in your MyConcordia Portal as well as in the Student Profile of your My eConcordia Portal. Your e-mail messages must include the following information:

- Your full name
- Your Concordia University e-mail address
- Your Concordia University Student ID
- Your course name and number pertaining to your inquiry

Save a copy of all e-mail correspondence for the duration of the term and until you have received your final letter grade for the course.

We strongly encourage you to use a Concordia University e-mail account or an account from a provider such as Sympatico, Videotron, etc. Free e-mail accounts such as Hotmail, Yahoo, etc. are not recommended and very often lead to communication problems.

You are expected to be polite at all times. Communications that do not meet this requirement will not be answered.

Announcements

- Important information regarding the course and some supplementary material, as needed, will be posted in the Announcements section on the course website.
- Please make sure to **read the postings frequently**, at least twice per week. The announcements are found in the centre of your eConcordia homepage. To receive announcements in your email inbox, click on **My Account** on your eConcordia homepage, select the box next to **I would like to receive course announcements by email** (below your personal information), and click **Update**.

The Discussion Board

- The discussion board is a versatile tool in an online course. It is akin to putting your hand up in class, but with a bonus: each and every student can read the questions and the various answers posted.

Note: The Discussion Board will be closed on the days of the midterm and final exam.

- Once the discussion board is made available, you will be assigned to a group and a TA within 24 hours of obtaining your eConcordia username and password.
- If you have not been assigned to a group within 24 hours of obtaining your eConcordia username and password, send an e-mail with your name, student ID number and the name of the course you are taking to discuss@econcordia.com and you will be assigned to a group within 24 hours.

Guidelines for posting material on the Discussion Board

- ❑ Do not post your telephone number, student ID, or any other personal information on the discussion board.
- ❑ Do not ask others to solve your assignment problems. (Asking for a hint or help getting started is okay.)
- ❑ Read the other postings to confirm that your question has not already been answered repeatedly.
- ❑ The Discussion Board is meant for the academic discussion of the course material. Keep postings pertinent to the course material.
- ❑ Questions pertaining to technical issues must be addressed directly to your TA via e-mail. Questions pertaining to grades or questions of a personal nature must be addressed directly to the Instructor via e-mail. Posts of this nature will be removed by the Forum Administrator.
- ❑ Of vital importance is respectful behavior on the discussion board. Refrain from making offensive statements and derogatory comments. For example, students must never insult another person or teaching assistant in a discussion.
- ❑ Students who fail to respect these rules will be asked to leave the discussion. It is within our discretion and authority to edit or remove any posting at any time. Please see the <http://www.concordia.ca/students/rights.html>.

No face-to-face office hours

- ❑ In fairness to the out-of-town students taking this course, the course has no face-to-face office hours. Instead, e-mail exchanges and the Discussion Board can be used to communicate with the course instructor and the teaching assistants.
- ❑ Please consult the Announcement section of the website for special events and activities organized, when appropriate, to enrich your study experience.

COURSE STRUCTURE

The course topics of Math 209 Online are divided into **thirteen lessons** ranging from introductory material about limits and continuity to definite integrals.

The posted study material covers the course topics, written interactively in Mathematica, the interactive language in which this course is based. The course material is supplemented with additional often simpler examples in the Mathematica Companion. The searchable electronic form of the Companion is a useful study tool and includes a comprehensive index of definitions and topics for easy reference.

Definitions and basic illustrative examples of the course topics are provided and recommended for easy reference and used in the latest edition of the Mathematica Companion, accessible and searchable online on the Kendall Hunt website.

Learning with Mathematica

Learning mathematics online using Mathematica, the best and richest computational software available, is rewarding, once the basics are mastered. Teaching and learning with Mathematica, both online and face-to-face has several benefits: **It saves time.**

Once templates are set up (as done in the Mathematica Companion), solving problems with the same structure, but different content, can be done by substituting different values of the variables in the templates. Comparison of the impact of the change of values of the variables is a breeze.

Templates can be written in Mathematica by using meaningful words or combinations of words as “variables.” This helps you to understand and memorize how to build solution schemes. This approach makes the Mathematica Companion a useful tool for learning formulas and other schemes. Since Mathematica also remembers keystroke sequences, rewriting meaningful variable expressions is a timesaver since Mathematica provides dropdown menus to help out.

Like all software approaches to learning, Mathematica problems and solutions can be saved and repetition, a key element of learning, is easy. Here too, the donkey work of rewriting the required contexts is avoided. In addition, Mathematica has an incredibly powerful tool called “Manipulation.” It allows you to solve a whole family of similar problems in one fell swoop.

LESSON THEMES

The course material in Math 209 Online is divided into thirteen lessons:

- Lesson 1: Getting Started
- Lesson 2: Limits and Continuity
- Lesson 3: Derivatives and Differentials
- Lesson 4: Marginal Analysis
- Lesson 5: Derivatives of Exponentials and Logarithms
- Lesson 6: Techniques of Differentiation
- Lesson 7: Related Rates and Elasticity of Demand
- Lesson 8: First Derivatives and Graphs
- Lesson 9: Second Derivatives and Graphs
- Lesson 10: Calculus and Optimization
- Lesson 11: Antiderivatives and Indefinite Integrals
- Lesson 12: Differential Equations and Exponential Growth
- Lesson 13: Limits and Definite Integrals

MATH NOTATION

Learning with technology has many advantages. But it also requires more attention to detail. In particular, the answers to certain questions and solutions accepted by MyLab | Math may be format dependent. By working through the practice quizzes and the practice midterm, you will discover fairly quickly the formats of answers and solutions acceptable to MyLab | Math. It is your responsibility to ensure that the format of your answer is according to the standards of MyLab | Math. Answers which have been marked incorrect only because of formatting issues will not be reconsidered.

For example, most mathematical systems, including Mathematica and MyLab | Math, write fractions in “reduced form,” by cancelling factors common to numerators and denominators. Depending on the

context, a fraction such as $12/24$ is usually reduced to $1/2$ and $12/24$ as a given answer may be marked as false. Similarly, the fraction $24/12$ is usually reduced to 2 and, again, $24/12$ may be marked as false.

Another frequently encountered problem is that answers to business problems are usually expected to be accurate to two decimal places. Therefore \$12.354 and \$12.357 as solutions of problems in finance, for example, may be marked as false since the system is expecting \$12.35 instead of \$12.354 and \$12.36 instead of \$12.357.

When copying decimal outputs from Mathematica into MyLab | Math, you should use the “Copy > As Plain Text” option to avoid copying the Mathematica decimal default length:

Input

`N@Exp@1D, 5D`

Output

2.7183

Copy (Not recommended)

2.7182818284590452353`5.

Copy > As Plain Text (Recommended)

2.7183

Mathematical systems are also remarkably good at producing exact symbolic answers where hand-held calculators often yield only approximate answers. A problem whose exact symbolic answer might be $17e$, for example, is marked as false if e is represented by a decimal approximation such as 2.71828. Mathematica clearly distinguishes between `Exp[1]` (exact) and `N[Exp[1]]` (approximate).

ASSESSMENTS

The assessments in this online course consist of four elements:

1. **Four online assignments** based on the posted Mathematica-written lesson material and illustrations taken from the **Mathematica Companion**.
2. **Two online quizzes** based on the posted lesson material as specified in the course agenda (Mathematica allowed).
3. **One online midterm examination** based on the posted lesson material as specified in the course agenda (Mathematica allowed).
4. Exceptionally for Winter 2022: **One online final examination** (Mathematica allowed).

Practice material

Practice material for the quizzes, and midterm, are posted in MyLab | Math and should be studied prior to the dates of these examinations.

All assignments, quizzes and the midterm examination are managed on the MyLab | Math website. The details are posted on the Announcement page of the course website. The quiz and midterm dates and the associated topics are posted on the course agenda, and posted on the My Agenda page of the website. You must pay specific attention to the dates and time of the two quizzes and the midterm examination, as explained below.

Assignments

The assignments bridge the Mathematica-based study material of the course and the MyLab | Math based assessment material. **Their solutions require the Mathematica software and the Mathematica Companion.** Late assignments will **NOT** be accepted.

Quizzes

The quizzes are randomized MyLab | Math 60-minute examinations. The length of the quizzes assumes that you have access to Mathematica to answer the randomized questions.

- The dates and times of the quizzes are posted in the My Agenda section of the course website and cannot be changed.
- The rules described in the Legal Matters and Missed Examination sections below apply to the quizzes.

The midterm examination

- The midterm is a randomized MyLab | Math 2-hour examination. The length of the examination assumes that you are using Mathematica to answer the randomized questions.
- The date and time of the midterm examination is specified in the My Agenda section of the course website and cannot be changed.
- The rules described in the Legal Matters and Missed Examination sections below apply to this examination.

The final examination

The date and time of the final examination is set by the University Examination Office and will only be known towards the end of the term.

Assessment Format, Duration, and Marks

ASSESSMENT	FORMAT	DURATION	MARKS
Assignments	Online	Unlimited	10 marks
Quiz 1	Online	60 minutes	5 marks
Midterm	Online	120 minutes	20 marks
Quiz 2	Online	60 minutes	5 marks
Final Exam	Online	180 minutes	60 marks
Online Pass Rule			
<p>In order to pass the EC version of this course, you must pass the final examination. (you must obtain at least 30/60 marks on the final)</p>			

*For any of the assessments on MyLab | Math, there may be an option called “Show your work” that the instructor enables, for some or all of the questions. This will be required to demonstrate proof of independent work, and understanding of material. If a question within MyLab | Math has the “Show your

work” option enabled, **you must show your work** to obtain the marks. If you don’t show your work, even with a correct answer, you will not obtain the marks.

Missed examinations

If you encounter a technical problem while accessing a quiz or the midterm examination for an acceptable reason such as an Internet connection failure, or an error message pops up, you must take a **screenshot of the problem**, and you must contact your TA as well as the eConcordia Helpdesk **immediately** to report your problem. eConcordia tracks all Internet connections and associated IP addresses. This log is used to assess the validity of your claim and what action can be taken to remedy the situation.

If you miss a quiz or midterm, for a legitimate reason (illness, death of a family member), you **MUST** contact the instructor immediately (one day after the missed assessment, at the latest). If you contact the instructor 2 days or more past the deadline, your request for an extension will not be granted. Lastly, requests for extensions will only be considered if you have verifiable proof (doctor’s note, etc.) to support your claim, otherwise you will obtain 0 marks for the missed assessment.

If you have missed the final examination for a legitimate reason, you must contact the University Registrar for further help at the following address: <http://registrar.concordia.ca/exam/faqdef.html>.

Access Centre for Students with Disabilities (ACSD) examinations

In order to be able to write an ACSD administered examination, you must be registered with the Concordia ACSD through the Concordia portal at <http://supportservices.concordia.ca/disabilities/registerwithacsd.php>.

In order to be eligible for disability-related services from the ACSD, students must satisfy the following conditions:

1. Be admitted to and currently enrolled for classes at Concordia University.
2. Provide the ACSD with qualifying documentation of a disability.

Once you have registered with ACSD eConcordia will receive a confirmation of the additional time allotted from ACSD. You will receive an email from eConcordia confirming the additional time allocated. Allow one week after the DNE date to receive your email confirmation. **Please contact your professor to confirm that the additional time has been added to your assessments as the assessments are on MyLab | Math.**

Assessments are taken on the same date as indicated in the agenda.

In the event that you do not receive a confirmation from eConcordia approving/confirming your accommodations email: acsd@econcordia.com - include your name, student ID, course and name of your adviser at the Concordia ACSD office.

GRADING SCHEME

Your final grade in this course will be a letter grade based on the following conversion table:

Letter	A+	A	A--	B+	B	B-	C+
Percent	90-100	85-89	80-84	77-79	73-76	70-72	67-69
		C	C-	D+	D	D-	F
		63-66	60-62	57-59	53-56	50-52	<50

TECHNICAL MATTERS

Time Zone

The eConcordia Help Desk is open Monday to Friday, from 9:00 a.m. to 5:00 p.m. Eastern Time.

eConcordia Help

For technical questions and inquiries such as login and account issues, or if you are having difficulty accessing the eConcordia site, please contact the eConcordia Help Desk electronically at helpdesk@econcordia.com or by telephone at (514) 848-8770 or toll-free at 1-888-361-4949.

If your existing hardware does not meet the listed requirements, you may not be able to access the course website and/or follow the course material and will therefore not be able to complete this course.

Technical Difficulties

The eConcordia team takes every possible measure to ensure that your online learning experience runs as smoothly as possible. There may be times, however, when you encounter technical difficulties that are simply beyond our control. This can include unforeseen network or server or connectivity issues.

Your Responsibility

It is the responsibility of all students to ensure that they **save a copy of all work** (solutions in Mathematica notebooks) submitted through the system. This applies to any work sent via e-mail and uploads and submissions to the course website. Students are required to save copies of work both on a computer hard drive and an external storage device (diskette, CD or USB key).

Error Messages

In the event that a technical problem arises, please send a copy of the error message you received in the body of your e-mail to helpdesk@econcordia.com.

Hardware Requirement

Please consult the eConcordia website for hardware required to follow eConcordia courses. Your computer must be able to run Mathematica and MyLab | Math. Both the Windows and OS X operating systems are supported.

Software Requirement

In order to follow and complete this course, you need Version 11 or later of the Mathematica software. The use of this software is free for all registered Concordia students.

Software Activation

Please note that activation of Mathematica requires a Concordia University e-mail address. No other email address will do.

Concordia e-mail Address

The process for obtaining a Concordia University e-mail address and downloading, installing, and activating Mathematica is also described in your MyConcordia portal.

Internet Access

To follow the course and complete all online quizzes and examinations, you require a high-speed Internet connection and a standard browser such as Firefox and Chrome. Other browsers may or may not be suitable for this course. In particular, Safari may or may not work correctly when interacting with the course and course material posted on MyLab | Math. The use of tablets or telephones to complete assessments is not advised.

Accessing MyLab | Math trouble-shooting

Access to MyLab | Math is a one-step process for all students registered in this course and is automatically provided as part of the eConcordia registration process. If you are experiencing problems accessing MyLab | Math from the eConcordia website use a different browser or try the following steps:

- Clear your browser's cache:
 - <https://support.pearson.com/getsupport/s/article/Deleting-Browser-Cached-Files-and-Cookies>
- Verify if your browser settings are configured correctly for MyLab | Math:
 - <https://support.pearson.com/getsupport/s/article/Browser-Settings>

LEGAL MATTERS

Academic integrity and code of conduct

All students are required to watch Concordia University's academic integrity video and successfully complete the academic integrity quiz within the first two weeks of the academic term.

Links to both of these resources can be found under the "Useful documents and links" heading on the university's academic integrity site: <http://www.concordia.ca/programs-and-courses/academic-integrity/>.

The University Code of Conduct regulations relevant to this course can be found at <http://www.concordia.ca/students/academic-integrity/code.html>.

Refunds

- A full refund for the Course Material Fee will be issued to students who withdraw from the course by Concordia University's DNE deadline each term AND then request the Course Material Fee refund through their eConcordia portal.
- No refund requests on Course Material Fees are accepted or processed after the DNE date.

- Please visit the Concordia University course calendar for applicable calendar dates.
- To request a refund on your Course Material Fee, login to www.econcordia.com, select My Accounts and then select Receipts/Refund Requests and proceed as instructed.
- If the refund is approved, you are refunded on the credit card used for the payment. If you paid in person at our offices by debit card, credit card, certified cheque or money order, a cheque is issued and sent by mail to the address listed in your eConcordia profile.

Your eConcordia account

Your eConcordia account is valid until the end of the term for which you are registered. It allows you to access all posted course material, the course Agenda, the Discussion Board, and other relevant course components, as well as the appropriate MyLab | Math material.

Disclaimer

This syllabus is subject to change and any changes will be posted in the Announcements section of your eConcordia portal. In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course are subject to change.

Tutorial Companies

Please note that private tutorial companies, some of whom aggressively promote their services on and off campus, are not authorized by Concordia University to distribute flyers on University premises and may not use Concordia University facilities to promote or provide their services on some flyers.

Concordia University and its academic departments do not have any affiliation with these companies even though names such as JMSB, Concordia, or references to specific departments often appear in a visible way.

Third-Party Software/Websites

Here is an excerpt on Concordia's policy on Educational software or services developed and owned by third parties, including those linked to textbooks, in-class surveys, lecture capture, virtual classrooms, course assignments and quizzes can be invaluable tools for the development and teaching of courses.

Third-Party software/websites that require personal information (name, email, student number, etc.):

Students are advised that external software and/or websites will be used in the course and students may be asked to submit or consent to the submission of personal information (for example, name and email) to register for an online service. Students are responsible for reading and deciding whether or not to agree to any applicable terms of use. Use of this software and service is voluntary. Students who do not consent to the use of the software or service should identify themselves to the course instructor as soon as possible, and in all cases before the DNE deadline, to discuss alternate modes of participation.

Third-party software/websites for work submission:

Students are advised that external software and/or websites will be used in the course and students may be asked to submit or consent to the submission of their work to an online service. Students are responsible for reading and deciding whether or not to agree to any applicable terms of use. Use of this software and service is voluntary. Students who do not consent to the use the software or service should identify themselves to the

course instructor as soon as possible to discuss alternate modes of participation that do not require them to give copyright or the right to use their work to a third party.

By using the external software or websites, students agree to provide and share their work and certain personal information (where applicable) with the website/software provider. Students are advised that the University cannot guarantee the protection of intellectual property rights or personal information provided to any website or software company. Intellectual property and personal information held in foreign jurisdictions are subject to the laws of such jurisdictions.

Third-party technology to record a course:

Note that, as a part of this course, some or all of the lectures and/or other activities in this course may be recorded. Recordings will be focused on the instructor and will normally exclude students. It is possible, however, that your participation may be recorded. If you wish to ensure that your image is not recorded, speak to your instructor as soon as possible.

Also, please note that you may not share recordings of your classes and that the instructor will only share class recordings for the purpose of course delivery and development. Any other sharing may be in violation of the law and applicable University policies, and may be subject to penalties.

IMPORTANT INFORMATION

Topic	Link
Academic Integrity	Academic Integrity
Academic Integrity Quiz	How to take the quiz
Educational Technology Guidelines	Educational software or services developed and owned by third parties
Access Centre for Students with Disabilities	ACSD
Concordia Library Citation & Style Guides	Citing - Help & How-to
Course Communication Tools	Communication
eConcordia Policies	Policies
Final Exams Information	Final Exams
Helpdesk/Support	FAQ
Refunds	Refunds
Technical Requirements	Technical Requirements
Tips for Studying Online	Studying Tips