BIOL 861 Syllabus

Brief Overview

This syllabus is long and contains important information. A table of contents is provided at the top to help you navigate to specific sections. Here is a very brief summary/overview of the syllabus:

Course Philosophy

- Learn by **doing**: Coding is a skill developed through practice, not memorization.
- Expect **frustration**: Finding and fixing mistakes are normal and essential to learning.
- Be **resilient**: Debugging and problem-solving are key skills.
- Work with **real data**.

Tech Setup (Before Week 1)

You must bring a laptop to class and install the following (select 'free version' of each):

1. **Install R**: https://cran.r-project.org/
2. **Install Positron** (the successor to RStudio): https://positron.posit.co/
3. In Positron, install tidyverse:
```
install.packages("tidyverse")
library(tidyverse)
```
4. In Positron, install positpal:
```
install.packages("remotes")
remotes::install_url("https://quantitative.bio/downloads/positpal.tar.gz")
library(positpal)
```

Course Materials

- **All material needed for this course** is freely available through OnQ. This includes electronic copies of the two main **textbooks** (optional printed copies available for purchase):
    - *R Crash Course for Biologists* AND *R STATS Crash Course for Biologists*

Weekly Routine

- **Before Lecture**:
    - Complete **assigned readings** (textbook; self-tutorials). TYPE EVERYTHING OUT.
    - Upload your **coding log** (explained in tutorial)
- **During Lecture**:
    - Participate in student-led presentations (60 minutes).

Assessments

- **25% Tutorial Presentation:** Teach one of weeks 2 through 5
- **40% Coding Challenges:** Weekly coding assignments to reinforce learning (4 x 10%)
- **25% Final Presentation:** Group analysis of a complex dataset, presented in week 6
- **10% Participation:** Engagement in class and with the assigned readings in **Perusall** and **Positron**.

Penalties (does not apply to students with pre-arranged accommodations)

- -**100%** on coding challenges.
- **-100%** on final project. It is presented in week 6, so it can't be late.

Support & Flexibility for Students with Accommodations

- **Grace period**: Typically 24 to 48 hours for coding challenges.
- **Office hours**: Scheduled in **1 hour per week;** no appointment needed.
- **Missed class**: Coding challenges can be completed individually, outside of class. Please stay home if you are sick.
- **Accessibility**: QSAS accommodations and OnQ videos available.

Using AI Tools

- **Do not use AI** to write code or any part of the coding challenges or projects. **NEVER copy-paste any text out of an LLM**.

Communication

- Ask questions in lecture/tutorial or office hours. ***Email is usually an unnecessary distraction that is used minimally in this course***.

- Check OnQ regularly for updates.

Course Information

General Course Information

Course: Biol 861
Course title: Introduction to linear models
Pre-requisites: BIOL 860, BIOL343, or equivalent
Semester and year: Fall 2026
Number of credits: 3.0
Learning hours: 98 (18 Lecture; 80 Private Study + Group Work
Modality (on campus, blended, or online): On campus

Course Description

Welcome to BIOL 861!

This course is designed for graduate students who **have some basic R knowledge** but want to develop practical analytical skills for their thesis research and/or a career in data science. Think of this course as a **bootcamp** — an full graduate course condensed into six weeks that gives you the basic tools you need to begin to explore and understand data.

We focus on fitting and interpreting basic to advanced linear and additive models in the **R coding environment.** Because we focus on statistical models, some prior experience with data management and visualization in R is required for this course.

I teach the first week to set the tone and establish the toolkit (coding, R Markdown, GitHub). In **weeks 2–5, students take turns teaching** the week's material as a tutorial presentation, with my support. Teaching a method is the fastest way to actually learn it, and explaining quantitative material to peers is a core professional skill for any scientist. **Week 6 is final presentations**, where you apply the full toolkit to real data.

In contrast to most courses in biology, the coding and quantitative skills learned here must be developed through extensive practice, trial, and failure. You won't learn to code and analyze data by reading and memorization — only through application. There is **no final exam**; weekly coding challenges and the final project reinforce skill development and problem-solving. Be prepared to get frustrated: you will make many errors, and most of your coding time will be spent debugging and searching for answers. This is **completely normal**, and self-directed research to solve coding problems is perhaps the most crucial skill you will learn in this course.

Expectations

For Instructors

The teaching team is responsible for developing and editing the course material, which was written specifically for this course and for you, the biology student. We will ensure that all relevant course material is available online and released on a weekly basis so that you know where you should focus your available time and energy. The course content is always a work in progress, so we welcome any

feedback on this material, from small spelling/grammar errors to points of confusion and general suggestions for improvement.

We will make mistakes, both in coding and in learning about coding. Everyone makes mistakes, and coding is particularly prone to error, especially when there are distractions. We will use these opportunities to demonstrate how to troubleshoot errors by carefully reading the warning messages and running smaller subsets of code to identify where the problems lie. **Learning how to troubleshoot code is perhaps the most important skills you can learn in this course.** But it requires a different kind of mindset (see 'For Students' Section).

The teaching team is committed to establishing and maintaining a healthy and inclusive learning environment. We recognize that mistakes and errors are an important part of your learning process. We respect and value students who are not afraid to take risks or try things that might be 'wrong'. Above all, we value students who are not afraid to fail. We will use frequent assignments and testing to limit the impact of mistakes on your final grade. We will provide timely feedback – usually within two to three weeks. This represents a very large time and energy investment from the teaching team. We do it to help you learn from your mistakes, focus on learning, and succeed on future assignments.

We will communicate weekly coding sessions. Lectures will cover only part of the assigned readings, so that there will be ample time available for questions or assistance.

For Students

It is expected that you will attend weekly lectures and present when it is your turn.

You are expected to bring a laptop capable of running Windows, MacOS, or Linux programs, and you must be able to access Queen's wireless network during lecture and tutorial sessions (see also "Technology Requirements"). Be sure to charge your laptop battery as there may not be enough plugs for everyone who needs one. When working in class or following recorded lectures, **you will code along in real-time**. The only way to effectively learn to program is to practice, and you are expected to practice as much as possible!

You are expected to complete the assigned readings each week, write down any questions that you have, and bring them to class. Then, review your answers to check for sources of confusion. You are expected to organize your thoughts into questions to ask during class. Please do not email questions that can be addressed during lecture or tutorial/office hours. If you aren't comfortable asking questions verbally, you may hand in written questions to the instructor during class or tutorial. These steps help to ensure that you are organized and prepared before attending lectures and tutorials.
Weekly assignments are also submitted online and generally due with 48-72 hours of being posted online. Working through the assigned chapters and TYPING EVERYTHING OUT will prepare you for these short deadlines, which are essential to reinforce and build on what you have learned each week.

You are expected to check the course website regularly (or use alerts) to keep track of deadlines. **Late assignments are scored as zero** (but see below regarding accommodations).

Any questions or concerns about the course should be raised in lecture or tutorial, or privately during weekly office hours (no appointment needed). Email is generally not an effective tool for course material, and questions that can be addressed in person will not receive an email response. However,

email is encouraged for urgent issues (e.g., medical or other personal emergencies, broken/incorrect website links, and other time-sensitive issues).

For Interactions

You will have regular interactions with the teaching team (TAs, instructor) and with your classmates. In all interactions, you are expected to be respectful and always behave with integrity, both in face-to-face interactions and when engaging online.

This course will also involve group-based activities that may require communication outside the classroom. You are responsible for maintaining contact and collaborating with all members of your group in a respectful and timely manner. Remember that other members of your group may not have the same resources or privileges and may need some flexibility or accommodation. **Developing skills to collaborate effectively within a diverse group of peers is an important goal of this course**.

Technology Requirement

You must have a laptop computer with internet access to participate in this course. Be sure to charge the battery as plugs may not be available for all students. Before attending the first lecture, you should install the following software:

- The R programming environment (free): https://www.r-project.org/
- Positron (the successor to Rstudio): https://positron.posit.co/
- Open Positron and run the following lines in the terminal and press enter after each. NOTE: this will install some of the R packages that we use in the course. It may take several minutes to install each one. Be sure to type each line EXACTLY:

```
install.packages("tidyverse")
library(tidyverse)
install.packages("remotes")
remotes::install_url("https://quantitative.bio/downloads/positpal.tar.gz")
library(positpal)
```

Suggested Time Commitment

Each week, you should commit 3 to 6 hours working through the assigned readings (self-tutorials), and ~ 2 hours completing assignments, with additional time to practice writing code, as your schedule permits. It is strongly recommended that you budget at least 10 hours per week reviewing and practicing the code in the assigned readings so that you are prepared to complete the associated assignment during scheduled class time.

Support for Success

This is a **full-credit graduate course** crammed into 6 weeks. As such, the workload in this course is **demanding by design**, because frequent and regular practice is essential to develop competence as a data scientist. However, we have incorporated "Universal Design for Learning" and other best practices to support your success.

- Parallel content is presented in both video and written form on the course website.
- Content is taught primarily through self-guided tutorials, outside of the time limitations of class, allowing you to work at your own pace.
- A grace period is added to the assignment deadline in case you need a bit more time.
- Mistakes are encouraged in readings and in-class coding because learning to identify and deal with coding errors is a very important skill that you will learn in this class.

- Regular coding challenges provide frequent feedback opportunities to help you identify strength and bridge knowledge gaps.
- Assignments are done in different formats with opportunities to ask questions and discuss ideas with peers.
- Assignments are structured to allow application of concepts and skills in realistic case studies.

Learning Tips

Coding involves a lot of trial-and-error that can be frustrating for students new to the discipline. First, know that this is completely normal, even to seasoned data scientists. A very common and effective approach to solving errors or other problems is to search Google or Stack Overflow. Often, simply copying and pasting an error into an online search will produce a helpful link. **Very often you can just type 'How do I X in R' (or the R package name like ggplot2, dplyr) into a search engine and look for links to similar questions answered on the Stack Overflow website**.

In addition, we (instructor and TAs) will generally leave ample time at the end of lectures and tutorials. You are strongly encouraged to ask the question in lecture or tutorial so that all students can benefit from the answer. Any private questions or issues can be discussed during weekly scheduled office hours (no appointment necessary). Email is not an effective mode of communication in this course, except for time-sensitive issues

Topics

Week 01	Introduction and Review (R, data wrangling, visualizations, distributions)
Week 02	Review of Linear Models
Week 03	Advanced (Generalized) Linear Models & Experimental Design
Week 04	Linear Mixed Models
Week 05	Generalized Additive Mixed Models
Week 06	Final project presentations

Course Learning Outcomes

Learning in this course is cumulative, meaning that content from early weeks is still relevant in later weeks. Therefore, assessments of the course are scaffolded to help you achieve the learning outcomes.

On successful completion of this course, students will be able to:

1. Write and debug R code to import, organize, and simulate biological data in support of statistical modeling.
2. Write clean and coherent code in R Markdown to create reports with professional formatting and an analysis that is OPEN and REPRODUCIBLE.
3. Produce professional graphs and figures that present data together with model estimates, predictions, and diagnostics, applying principles of effective visual design and colour theory.
4. Fit and interpret linear models (t-tests, ANOVA, regression, ANCOVA) — including multiple predictors and interactions — with a robust QA/QC strategy before and after model fitting.

5. Apply generalized linear models with appropriate error distributions and link functions to non-normal data (counts, proportions, binary outcomes), and design robust experiments using randomization, balance, replication, and adequate sample size.
6. Use linear mixed models to account for non-independence, blocking, and repeated measures, contrasting fixed and random effects.
7. Apply generalized additive (mixed) models to characterize non-linear relationships, including changes over space and time.
8. each a quantitative method to peers — prepare and deliver an effective tutorial presentation on statistical/coding material.

Important University Dates

Please visit the Faculty of Arts and Sciences Sessional Dates website for all academic deadlines.

Inclusion

Land Acknowledgement

As a descendant of uninvited colonists, I feel tremendously privileged to live, learn, work, and play on these lands. As Queen's University is situated on traditional lands of the Anishinaabe and Haudenosaunee, I invite you all to be mindful with me about the many lessons we learn while on these lands, and how we might apply our newfound skills and knowledge for the benefit of all.

Even as a well-established scientist, I admit I have much to learn from the teachings and traditions of the Anishinaabe and Haudenosaunee, who have lived on these lands since time immemorial. While researching some of this history, I was moved to learn about the Seven Grandfathers in the Anishinaabe tradition, which, as I understand, demonstrate principles for living a "good" life. These include Dabaadendiziwin (humility/compassion/patience), Gwayakwaadiziwin (bravery to be honest), Minaadendamowin (respect for all creation), Nibwaakaawin (wisdom/knowledge to help people) and Zaagi'idiwin (unconditional love given and received). It is worth reflecting on how well these principles resonate with other cultures and traditions around the world, suggesting a deep truth.

This is especially important for those of us who analyze and interpret data to inform decision-making. Reflecting on the way that cultural biases influence the questions we ask, and the answers we provide, can only improve our contributions as scientists and community members.

Moreover, it can be difficult and even overwhelming as a student to struggle through the stresses and demands of a university degree and life more generally. When you feel this way, I encourage you to learn or return to these Indigenous teachings, and/or teachings from your own cultural traditions, to recall what really matters in life, and to let these insights guide you through difficult decisions.

Equity, Diversity, and Inclusivity Statement

Equity and diversity are central to our educational mission and standards of excellence in this course and at Queen's University. It is critical that we work together to dismantle direct, indirect, and systemic discrimination that still exists within our institutional structures, policies and practices -- and in our community. These take many forms and work to differentially advantage and disadvantage persons

across social identities defined by race, ethnicity, disability, gender identity, sexual orientation, faith and socioeconomic status, among other factors. As students and educators, we all have important roles to play to identify and address systemic discrimination for the benefit of science and society.

Building a Classroom Community

University is a place to share, question, and challenge ideas. Each student brings a different set of lived experiences. You can help to create a safer, more respectful classroom community for learners by following these guidelines:

- Make a personal commitment to learn about, understand, and support your peers.
- Assume the best of others and expect the best of them.
- Recognize and value the experiences, abilities, and knowledge each person brings to the course.
- Acknowledge the impact of oppression on other people's lives and make sure your words and tone are respectful and inclusive.
- Encourage others to develop and share their ideas.
- Pay close attention to what your peers say/write before you respond. Think through and re-read what you have written before you post online or send your comments to others.
- Be open to having your ideas challenged and challenge others with the intent of facilitating growth.
- Look for opportunities to agree with one another, building on and intentionally referencing peers' thoughts and ideas; disagree with ideas without making personal attacks, demeaning, or embarrassing others.

Fostering Accessibility

All of us have a shared responsibility for fostering accessibility and promoting meaningful inclusion of those with disabilities. The Accessibility Hub at Queen's University's Human Rights & Equity Office offer a host of tutorials that provide us all with practical tips for:

- creating accessible documents, e.g., to submit to your teaching team or share with peers in peer feedback activities/in a presentation,
- emails, e.g., while communicating with group members or your teaching team, and
- meeting practices (e.g., in tutorials/labs/seminars or virtual meetings.

Name/Pronoun

If, for whatever reason, you wish to change how your name appears in onQ and/or on class lists, please follow these steps. You may also use this process to add your pronouns to the appearance of your name.

1. Log into SOLUS.
2. Click on Personal Information tab.
3. Click on the Names tab
4. Click on the Add New Name tab
5. Choose Preferred from the Name Type drop down menu
6. Enter the name you would like to appear in onQ and/or on class lists.
7. Click Save.

Please allow 24 to 48 hours for your name to be registered within the system. If you have further questions or concerns, please contact ITS at Queen's University.

Course Materials & Technologies
Material costs

Required Course Textbooks

Course Textbooks	Edition(s)	Publisher	For Purchase	Cost	At Queen's Library?
R Crash Course for Biologists	2nd	DP Press	Provided free via OnQ (printed copies available for purchase)	0	Yes
R STATS Crash Course for Biologists	1st	DP Press	Provided free via OnQ (printed copies available for purchase)	0	Yes

Other Required Materials

Resource	Resource Type	Access	Cost	Further Information
Laptop	Other	Borrow or purchase new or used	$0-$1000	Must be capable of running Windows, MacOS, or Linux
R	Other	Free online download	$0	https://cran.r-project.org/
Positron	Other	Free online download	$0	https://positron.posit.co/downloads/
Positpal	Other	Free online download	$0	In the R Console, type: install.packages("remotes") remotes::install_url("https://quantitative.bio/downloads/positpal.tar.gz") library(positpal)

Supplemental Materials – All other material available through the course website via OnQ

Educational Technologies, Help, Privacy, and Accessibility

This course makes use of the following website(s), program(s), and/or application(s) for specific educational use/purposes.

Privacy: Be aware that your independent use of the website(s), programs, and/or application(s) used in this course*, beyond what is required,* is subject to their terms of use and privacy policy. You are encouraged to review the applicable privacy statements before using the site. Please see below.

Accessibility: Queen's University is committed to developing courses that are accessible. For further information on accessibility compliance of the website(s), program(s) application(s) used in the course, please consult the links below.

Software	Use	Support	Privacy	Accessibility
onQ	Accessible learning			

Notice of Recording

Synchronous (live) classes will be delivered in this course through Zoom and/or Teams, video conferencing platforms supported by the University. Steps have been taken by the University to configure these platforms in a secure manner. Classes will be recorded with video and audio (and, in some cases, transcription) and will be made available to students in the course for the duration of the term. The recordings may capture your name, image or voice through the video and audio recordings. By attending these live classes, you are consenting to the collection of this information for the purposes of administering the class and associated coursework. If you are concerned about the collection of your name and other personal information in the class, please contact the course instructor to identify possible alternatives.

To learn more about how your personal information is collected, used and disclosed by Queen's University, please see the Notice of Collection, Use and Disclosure of Personal Information.

Copyright of Course Material

Course materials created by the course instructor, including all slides, presentations, handouts, tests, exams, and other similar course materials, are the intellectual property of the instructor. It is a departure from academic integrity to distribute, publicly post, sell or otherwise disseminate an instructor's course materials or to provide an instructor's course materials to anyone else for distribution, posting, sale or other means of dissemination, without the instructor's express consent. A student who engages in such conduct may be subject to penalty for a departure from academic integrity and may also face adverse legal consequences for infringement of intellectual property rights.

Communication

Questions about the Course and Contacting the Teaching Team

Questions about the course can be addressed in person during weekly classes or office hours (see OnQ)

Queen's Email

The university communicates with students via Queen's email. Please check your email regularly to ensure you do not miss important information related to your course.

Course Feedback

At various points during the course, you may be asked to take part in a variety of feedback activities, such as surveys and questionnaires. This feedback enables the teaching team to improve the course. All surveys are anonymous and are directly related to activities, assessments, and other course material.

Assessments

Weighting and Alignment with Course Learning Outcomes (CLOs)

Assessment	Alignment with CLOs	Weighting
Tutorial Presentation	1,8 + assigned week's topics (one of 3-7)	25%
Coding Challenges	1-7	40%
Final Presentation	3-7	25%
Participation	1-8	10%
Total		100%

Assessment Flexibility

The coding challenges are designed to reinforce learning and provide ample practice applying the concepts covered in the self-tutorials. To build in flexibility for all students, every coding challenge has a grace period (typically 24 to 48 hours) that you may use without making a request; after that, late challenges are scored as zero. Because the course is cumulative and only six weeks long, longer delays quickly become overwhelming.

Descriptions of Learning Activities and Assessments

Tutorial Presentation (25%)

- In Week 1 you will sign up to teach one tutorial (individually or in groups, depending on enrolment). You are responsible for delivering that week's presentation (~60 minutes): teaching the week's methods with live-coded, working examples that your classmates can follow along with, and then supporting your peers as they begin the week's coding challenge in class.
- Grading is based on a rubric covering accuracy of the material, clarity and organization, quality of the live-coded examples, timing, and engagement of your peers.
- A scheduled presentation cannot be submitted late. With the short course timeline, it is not possible to reschedule presentations.

Coding Challenges (40%)

- One short coding challenge is assigned each week from Week 2 to Week 5. You start it in class during the lecture session and submit it online, usually within 48 to 72 hours.
- Each challenge reinforces the coding and analysis skills from that week's self-tutorial.
- Submit two files: your R Markdown (.Rmd) file and the coding log exported by the course coding-log package.
- Challenges are graded complete/incomplete on a simple 0 to 3 scale for effort and completeness, not for correctness. A good-faith attempt that shows errors and troubleshooting earns full credit; a file that is missing, empty, or clearly not your own work does not.
- You may discuss challenges with classmates during class, but the code and log you submit must be your own. Students who are absent may complete the challenge outside class (see Class Attendance).
- All four challenges must be submitted and count towards your grade.

Final Presentation (25%)

- A group data project presented in Week 6: your group takes a complex biological dataset end-to-end through the course toolkit — importing and cleaning it, reshaping and joining with tidyverse tools, visualizing it with ggplot2, describing it with appropriate summary statistics, and posing and testing a biological question with a basic linear model, including QA/QC before and after fitting.
- Each group gives a short presentation of their analysis during the Week 6 session. Grading covers the biological question, the appropriateness of the analysis, the quality of the figures, the QA/QC, and the interpretation of results.
- Because the presentation happens in class in Week 6, it cannot be submitted late.
- In larger classes, you may be assigned to groups. You may divide the work within your group, but the code each member contributes must be their own.

Participation (10%)

- The participation grade is designed to motivate attendance and active engagement in lectures and tutorials, as well as the assigned readings.
- Participation for readings is recorded through Perusall and the positpal record of your attempts, which you upload before lecture, as part of your reading assignment.
- Participation and engagement is observed during your peers' presentations — staying attentive and mentally present, asking questions, and working along with the live-coded examples.

Assignment Submission Policy

Late assignments are assigned a score of zero. However, each assignment will have a grace period; your assignments are due on the due date posted but will be accepted, without penalty. Short-term academic consideration is therefore built into all assignment due dates and will not be extended past this grace period for students without long-term academic consideration or accommodations for disabilities. Please see the Academic Considerations for Students with Extenuating Circumstances and Accommodations for Disabilities sections of the syllabus for more information.

Policy Review of Graded Work

Requests for assignment regrading may be made to your TA during the lecture or tutorial help sessions in the week following your assignment submission. Requests made more than 5 days after grading will not be considered. Be sure to read your TA's feedback carefully before you submit a review of graded work. To request that your assignment be reviewed, please be sure to communicate the following:

- Your name, student number, and assignment number.
- For group projects, the name of all group members and confirmation that all agree to the review.
- A clear explanation of your reason for the request:
    - The specific aspects of your assignment that you believe were not sufficiently awarded, referring to the categories of the rubric.
    - Why you believe that your assignment meets the criteria for a higher mark for each of the categories of the rubric that you indicated above. Please make explicit reference to the detailed descriptions of each category provided in the rubric.

If a review of graded work results in only a slightly different final grade, the original grade will stand. Should we find an error where marks were not assigned when they should have been or were missed in adding up the total score or were added up incorrectly resulting in a higher score than earned, the grade will be changed so that it is accurate. Grades would only increase or decrease if there was evidence of an error in marking.

Policies

Class Attendance

Your presence and participation in class contributes to the knowledge and skills that you will develop throughout this course. I expect that you attend class regularly, participate in class conversations and learning activities. These types of activities provide active engagement, promote a deeper understanding of the course content, and contribute to your success in this course.

You are expected to bring a laptop capable of running Windows, MacOS, or Linux programs, and you must be able to access Queen's wireless network during lecture and tutorial sessions (see also "Technology Requirements").

Academic Support

All undergraduate students face new learning and writing challenges as they progress through university: essays and reports become more complex; effectively incorporating research into writing becomes more important; the types of assignments become more diverse; managing your time and developing the skills you need to read and think critically gets more challenging. I encourage students to contact Student Academic Success Services (SASS). SASS offers many different ways to receive support:

- Free online or in-person appointments to get personalized support on writing and academic skills from expert staff and trained peers.
- Workshops and drop-in programs. SASS' Events Calendar lists events coming soon.
- Online resources that provide strategies for academic skills and writing development at university.
- If English is not your first language, SASS has specific resources for English as Additional Language students, including weekly programs and EAL academic skills appointments. You can meet on an ongoing basis with an EAL consultant to work on your academic writing, speaking, listening, and reading skills.

Accommodations for Disabilities

Queen's University is committed to working with students with disabilities to remove barriers to their academic goals. Queen's Student Accessibility Services (QSAS), students with disabilities, instructors, and faculty staff work together to provide and implement academic accommodations designed to allow students with disabilities equitable access to all course material (including in-class as well as exams). If you are a student currently experiencing barriers to your academics due to disability related reasons, and you would like to understand whether academic accommodations could support the removal of those barriers, please visit the QSAS website to learn more about academic accommodations or start the registration process with QSAS by clicking ***Access Ventus*** button at **Ventus | Accessibility Services | Queen's (queensu.ca)**

VENTUS is an online portal that connects students, instructors, Queen's Student Accessibility Services, the Exam's Office and other support services in the process to request, assess, and implement academic accommodations.

To learn more go to: https://www.queensu.ca/ventus-support/students/visual-guide-ventus-students

Academic Consideration for Students in Extenuating Circumstances

Please note that specific accommodations are available for this course, namely:

1. Weekly assignments may receive deadline extension of up to 48 hours. However, it is strongly recommended that students complete assignments as soon as possible as each week builds on the assignments covered in previous weeks.
2. Supplementary videos are provided via the OnQ course website. These act as guided coding tutorials that cover most of the key content in the written self-tutorials.

Academic Consideration is a process for the University community to provide a compassionate response to assist students experiencing unforeseen, short-term extenuating circumstances that may impact or impede a student's ability to complete their academics. This may include but is not limited to any extenuating circumstance (illness, bereavement, traumatic event, injury, family emergency, etc.) which is short-lived, begins within the term, and will not last longer than 12 weeks - see Academic Consideration webpage for details (https://www.queensu.ca/artsci/undergraduate/student-services/academic-consideration)

> Each Faculty has developed a protocol to provide a consistent and equitable approach in dealing with requests for academic consideration for students facing extenuating circumstances. For more information, undergraduate students in the Faculty of Arts and Sciences should consult the Faculty's webpage on Academic Consideration in Extenuating Circumstances and submit a request via the Academic Consideration Request Portal. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty.

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their instructor and/or course coordinator as soon as possible once academic consideration has been granted. Any delay in contact may limit the options available for academic consideration. While we encourage instructors to accommodate, each instructor has discretion in deciding whether or how to apply the Academic Consideration. For more information on the Academic Consideration process, what is and is not an extenuating circumstance, and to submit an Academic Consideration request, please see the Faculty of Arts and Science's Academic Consideration website. ASO courses include links to information on **Academic Consideration** on your **Course Homepage** in onQ.

Please see the Teaching Team page for contact information for your instructor and TA(s), where relevant.

For more information, please see the Senate Policy on Academic Consideration for Students in Extenuating Circumstances.

Queen's Policy Statement on Academic Integrity

Queen's University is dedicated to creating a scholarly community free to explore a range of ideas, to build and advance knowledge and to share the ideas and knowledge that emerge from a range of intellectual pursuits. Each core value of academic integrity, as defined in the Senate Academic Integrity Policy, gives rise to and supports the next.

Honesty appears in presenting one's own academic work, whether in the context of an examination, written assignment, laboratory or seminar presentation. It is in researching one's own work for course assignments, acknowledging dependence on the ideas or words of another and in distinguishing one's own ideas and thoughts from other sources. It is also present in faithfully reporting laboratory results even when they do not conform to an original hypothesis. Further, honesty is present in truthfully communicating in written and/or oral exchanges with instructors, peers and other individuals (e.g. teaching assistants, proctors, university staff and/or university administrators).

Trust exists in an environment in which one's own ideas can be expressed without fear of ridicule or fear that someone else will take credit for them.

Fairness appears in the proper and full acknowledgement of the contributions of collaborators in group projects and in the full participation of partners in collaborative projects.

Respect, in a general sense, is part of an intellectual community that recognizes the participatory nature of the learning process and honours and respects a wide range of opinions and ideas. However, "respect" appears in a very particular sense when students attend class, pay attention, contribute to discussion and submit papers on time; instructors "show respect by taking students' ideas seriously, by recognizing them as individuals, helping them develop their ideas, providing full and honest feedback on their work, and valuing their perspectives and their goals" ("The Fundamental Values of Academic Integrity", 3rd Edition, p. 8).

Ultimately, responsibility is both personal and collective and engages students, administrators, faculty and staff in creating and maintaining a learning environment supported by and supporting academic integrity.

Courage differs from the preceding values by being more a quality or capacity of character – "the capacity to act in accordance with one's values despite fear" ("The Fundamental Values of Academic Integrity", 3rd edition, p. 10). Courage is displayed by students who make choices and integrous decisions that are followed by action, even in the face of peer pressure to cheat, copy another's material, provide their own work to others to facilitate cheating, or otherwise represent themselves dishonestly. Students also display courage by acknowledging prior wrongdoing and taking proactive measures to rectify any associated negative impact.

All of these values are not merely abstract but are expressed in and reinforced by the University's policies and practices.

Syllabus statements for Generative Artificial Intelligence (AI) Tools

- **Not permitted**: Using generative AI writing tools such as ChatGPT in your submitted work is not permitted in this class. This type of use constitutes a departure from academic integrity. Original

work, completed wholly by you, is expected to be submitted in this course. Any other use constitutes a Departure from Academic Integrity.

Queen's Student Academic Success Services (SASS) offers a self-directed, online academic integrity module which we encourage all students to take which will help with:

- Understanding the nature of the academic integrity departure
- Understanding the expectations of and role of sources in scholarly writing
- Integrating sources into your writing (paraphrasing, quoting, summarizing)
- Understanding when and how to cite your sources
- Managing your time effectively to avoid the need for shortcuts
- Taking effective notes to ensure accuracy of source material and correct attribution

Turnitin Statement

This course makes use of Turnitin, a third-party application that helps maintain standards of excellence in academic integrity. Normally, students will be required to submit their course assignments through onQ to Turnitin. In doing so, students' work will be included as source documents in the Turnitin reference database, where they will be used solely for the purpose of detecting plagiarized text in this course. Data from submissions is also collected and analyzed by Turnitin for detecting Artificial Intelligence (AI)-generated text. These results are not reported to your instructor at this time but could be in the future.

Turnitin is a suite of tools that provide instructors with information about the authenticity of submitted work and facilitates the process of grading. The similarity report generated after an assignment file is submitted produces a similarity score for each assignment. A similarity score is the percentage of writing that is similar to content found on the internet or the Turnitin extensive database of content. Turnitin does not determine if an instance of plagiarism has occurred. Instead, it gives instructors the information they need to determine the authenticity of work as a part of a larger process.

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