Learner-Centred Syllabus

BIOL 243 / GPHY 247 / KNPE 251 / NURS 323 / PSYC 202 – Introduction to Statistics
Fall 2022
Credits: 3.0
Modality: Blended (in-person class and tutorial)

Course Instructors
Dr. Sarah Yakimowski (Lecture Instructor, Department of Biology)
Dr. Randall Flanagan (Tutorial Instructor, Department of Psychology)

Course Program Assistant
Danielle D'Souza

Important University Dates

Sept. 6	Classes start
Sept. 19	Last day to add courses
	Last day to drop courses without financial penalty
Nov. 1	Last day to drop courses without academic penalty Dec. 5 Classes end
Dec. 8-22	Fall Term Final Assessment period

Equity, Diversity, and Inclusivity Statement

Queen's University recognizes that the values of equity and diversity are vital to and in harmony with its educational mission and standards of excellence. It acknowledges that direct, indirect, and systemic discrimination 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 such as race, ethnicity, disability, gender identity, sexual orientation, faith, and socioeconomic status, among other examples. We are committed to continual examination of our practices and ongoing change to improve equity, diversity, and inclusion in our community.

Land Acknowledgement

Let us acknowledge that Queen's is situated on traditional Anishinaabe and Haudenosaunee territory. We are grateful to be able to be live, learn and play on these lands. (Four Directions Indigenous Student Centre, Queen's University)

Name/Pronoun

Knowing and applying students' names and pronouns is a crucial part of developing a productive learning environment that fosters safety, inclusion, and personal dignity. This is an important part of the inclusion work here at Queen's

If you wish to change how your name appears in onQ and 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 your preferred name.
7. Click Save.

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

Expectations

For Instructors

As instructors we are committed to:

- Engagement with the course material – we love finding ways to navigate the sometimes complex course material, and to share our love of data!
- The student learning experience – we aim to create many, and varied, opportunities for students to interact with the course material.
- The process of learning – mistakes and practice are an important part of learning the material, and 'learning how to learn', more generally. We are here to help you navigate this experience.
- Respectful communication – we look forward to communicating with you in person (in lecture, in tutorial), in weekly student help sessions, online via discussion boards, and through the course email (in2stats@queensu.ca).
- Differences in learning – We apply universal design to account for differences in learning where possible and arrange additional accommodations in collaboration with the Queen's Exam Office and QSAS. We are always open to discussion – we know that a complex set of factors affect you learning and will work to support your education.

- Challenges – Please discuss your challenges with us during class, tutorial, help sessions and the Course Questions Forums. You can also always reach us at in2stats@queensu.ca.

For Students

To achieve teaching and learning success, our expectation of students includes:

- Preparation for weekly class via online e-book modules
- Preparation for tutorials via class and the Software Skills Guides (OnQ)
- Preparation of necessary technology for participation in class, tutorial, and online activities (e.g., weekly quizzes, software skills development)
- Attendance and participation in class and tutorial to the best of your ability
- Respectful communication and interactions with all tutorial group members, teaching assistants and instructors – we know group work often comes with challenges, but there is also a lot of opportunity to learn from one another and to share your strengths.
- Academic integrity with respect to all course assignments and examinations

Learning Outcomes

After completing this course, students should have the knowledge and skills to do the following:

1. Identify the features of a data set to determine how best to summarize and display it.
2. Choose the appropriate statistical test and provide the rationale for selection.
3. Compute basic parametric statistical tests to test hypotheses.
4. Interpret the results of statistical tests and data software output to draw valid conclusions.
5. Communicate results of statistical analyses with clear figures and text.
6. Apply knowledge of statistics and research design (e.g., sampling) to critically evaluate research findings.

Netiquette

In any course you often communicate with your peers and teaching team through electronic communication. You are expected to use the utmost respect in your dealings with your colleagues or when participating in activities, discussions, and online communication.
Here is a list of n/etiquette guidelines. Please read them carefully and use them to guide your communication in this course and beyond.

1. Make a personal commitment to learn about, understand, and support your peers.
2. Give others the benefit of the doubt.
3. Ensure your writing is respectful and inclusive.
4. Recognize and value the experiences, abilities, and knowledge that each person brings.
5. Recognize and value the diversity of learning and communication styles.

6. Carefully re-read your writing before posting or sending to others.
7. It is okay to disagree with ideas, but personal attacks will not be tolerated.

Course Materials

There are three types of course materials (all required)

1. The first is an eBook entitled "Taking the Anxiety out of Statistics" by Nelson & Beyer (Kendall Hunt Publishing). Queen's students can purchase a special subscription. Note that no royalties are collected on this eBook.
   Modules of the e-book must be completed before attending class. In class (lecture) we will spend more time with challenging topics and use case studies to begin applying your knowledge.
2. The second is a Top Hat account for active learning during lectures. https://tophat.com/ You will receive an email inviting you to join the Top Hat course. Top Hat 'clicker' questions will be used during lectures to check in with your understanding of key concepts, and to navigate case studies as a class.
3. Software skills guides will be available in onQ. The course uses Microsoft Excel and RStudio, both of which are free for students.
   Software skills guides will be assigned ahead of each tutorial, and this material is also assessed in a series of 3 online quizzes.

Course Timeline

The Course Timeline shows all relevant course dates, including assessments, as well as links to other important course information. As dates may change, you should consult the Timeline each time you log in to the course.

Please note, some students may see an onQ Calendar for their course. However, the onQ calendar does not display all dates associated with your course assignments. For complete information all of your assignments in this course and the start and close dates, please refer to the Course Timeline.

If there are discrepancies between dates in the course onQ site, the Timeline will be considered accurate.

All times are in Kingston time (Eastern Time).

Topics

Module 0 - Course Overview

Module 1 - Anatomy of a Statistical Study

Module 2 - Study Designs and Sampling

Module 3 - Descriptive Statistics
Module 4 - Visualizations
Module 5 - Probability
Module 6 - Sampling Distributions
Module 7/8 - Hypothesis Testing and T-tests
Module 9 - Chi-Square Test
Module 10 - Linear Regression
Module 11 - Single-Factor ANOVA
Module 12 - Two-Factor ANOVA

Suggested Time Commitment

Students can expect to spend approximately **9** hours a week in study/practice and online activity for this course.

- Online Lesson: 2-4.5 hours (as needed)
- Lecture: 1 hour
- Tutorials: 1.5 hours
- Software Guides: 1 hour
- Additional Practice: as needed

Timing of Final Examinations

The exam dates for each Term are listed on the Faculty of Arts and Science webpage under Important Dates. Student exam schedules for the Fall Term are posted via SOLUS immediately prior to the Thanksgiving holiday; they are posted on the Friday before Reading Week for the Winter Term and for the summer term, they are individually noted on the Arts and Science Online syllabi. **Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel/holiday plans or flight reservations.**

Assessment

Weighting of Assessments

Assessment	Location	Weight	Learning Outcomes	Content Elements
Top Hat (lectures)	In person lecture	5%	1-4, 6	e-book modules

Software Skills Quizzes	Online	12%	1-5	Software Skills Guides
Weekly Quizzes	Online	13%	1-4	e-book modules, Software Skills Guides
Tutorial Activities	In-person tutorial	25%	1-5	Integrates all course material
Term test (x1)	TBD	15%	1-4, 6	e-book modules, practice problems, lectures
Final Exam	TBD	30%	1-6	e-book modules, practice problems, lectures

Assessment and Activities Descriptions

Software Skills Quizzes

Software Skills quizzes are timed quizzes designed to evaluate your skills in Microsoft Excel and RStudio based on what you've been taught in the preceding Software Skills Guides and tutorials. The quizzes start at a fixed time (see Timeline for dates and times) and are done online. It is the responsibility of the student to ensure that they are using a reliable computer and internet connection and are working in a physical space that is amenable for the quiz.

Weekly Preparatory Quizzes

There are 11 quizzes, each open for a week (see Timeline for dates and times). The quizzes will consist of multiple-choice questions based on the weekly material from e-book modules, self-assessments, and the software skills guide (when applicable). You can take the quiz up to 5 times. Your highest mark will be recorded as your mark for the quiz.

Tutorial Activities

There are 10 in-person tutorial activities in the course. Each of these are completed in a group of 3-4 students. The tutorials are performance-based activities designed to provide the opportunity for students to combine theoretical and skills-based concepts from modules and

software skills guides. Statistical analyses are performed to test scientific hypotheses. A wide variety of datasets are used to help you see the utility of statistics.

Please note the following important policies related to group tutorials. You will be assigned to a tutorial group within your section for the semester. You must attend the tutorial that you signed up for and work with your group to receive a grade. If you attend a tutorial that you did not sign up for, you will receive a grade of zero (even if you completed the tutorial activity).

Term Test

A term test will cover material for the first half of the course (weeks 1-6). The test will consist of multiple choice and short answer questions (the same format of the final exam). The term test will cover material from the eBook modules, lectures, module practice problems and elements of the tutorials.

Final Exam

The Final Exam is three hours in length and includes multiple-choice and short answer questions based on the material from the entire term, including all e-book modules, lectures, module practice problems and elements of the tutorials.

Study Habits for Success

Active learning requires a different set of study habits than passive learning—here are some study habits to help you succeed.

Preparation is key

Make sure to devote enough time to master the weekly module material. Cramming at the last minute may work for passive learning, but it does not give you enough time to build the connections across the material that you need for active learning.

Seek help early

The online material contains lessons, quizzes, and additional resources to get you ready for each week. Give yourself the time to work through the main material, and any of the additional resources when you find concepts more challenging.

Reading is not enough

The central part of active learning is that you are at the centre of your learning. Working through the online material gives you a foundation, but you need to develop the connections that come from applying the material. Some good strategies are to write a brief set of paragraphs to summarize the material, work in study groups to discuss the ideas, go through the quiz questions with a study partner, and come to help sessions.

Essential requirements and flexibility to succeed

Queen's University supports Universal Instructional Design to create more accessible learning environments. In addition to incorporating a variety of delivery methods and learning materials, this course has several academic accommodations built directly into the assessments. For most students, the assessment design incorporates extra time on assignments/tests and computer-assisted examinations.

If you have a formal academic accommodation that goes beyond the accommodations described below, please see the course homepage and click the blue "Submit and Manage your QSAS Accommodations" button. You may read more about our approach to academic accommodations and considerations in the relevant sections of the course syllabus (see Policies below).

Weekly Quizzes are completed online, in a location of your choosing, and are open for one week. The quizzes take from 30-50 minutes to complete depending on the week. The 7-day window provides for any time accommodations, as well as enough time to attend the help sessions. If you cannot write one or more of the weekly quizzes and have an approved academic consideration, your total quiz grade will be evenly redistributed across the completed quizzes.

Tutorial Activities are completed during in-person tutorial times indicated on the Tutorials page. Since the tutorials include group work, students will need to work together during the scheduled time. It is not possible to have individual accommodations for these group activities.

We open up the tutorial activity ahead of time so that you can prepare before coming to tutorial. You must have attended the tutorials to submit a report. If you are absent and have an approved academic consideration, your tutorial grades will be redistributed over the tutorials for which you were present.

Software Skills Quizzes are completed online at a scheduled time. These are timed quizzes and if you require extra time for an approved accommodation, we will gladly add that to your individual quiz once you submit your QSAS accommodation (see the course homepage). If you cannot write one or more of the software skills quizzes and have an approved academic

consideration, your total software skills quiz grade will be evenly redistributed across the completed quizzes.

Term Test and Final Exam are written during scheduled times—please see the Course Timeline for details. Any students with approved QSAS accommodations will have their accommodations managed by the exams office.

If you cannot write the final exam and have an approved academic consideration, you will be required to write a deferred exam at some point during the following academic term.

Deferred Final Exam - Students receiving permission to write a deferred final exam will be expected to write their exam during the Faculty of Arts and Science deferred exam period with exact time, date, and location TBA. Requests for individualized deferred exam dates will not be accommodated. The deferred exam is considered an official exam to which all the exam regulations apply.

Late Policy

Tutorial activities are due at the end of your scheduled tutorial. The late penalty is 10% per day and this is first applied 30 mins after a tutorial session ends.

Policy Regarding Regrading

Grades on assessments are allocated based upon demonstrated mastery of the materials and skills as evaluated by the instructor/TAs.

All assignments and learning activities will be graded by the teaching team in line with established marking practice.

Students who believe grades on their assessments are inaccurate should request a regrade by submitting the assessment to the appropriate assignment submission folder (linked below or under "Assignments" in the NavBar) with a written explanation as to why your work deserves a different grade than assigned. Please include this written explanation in the "Comments" text box when submitting your file(s).

Submission Folder Links:
Regrading - Tutorials
Regrading - Term Test
Regrading - Final Exam

The regrade will stand as the final mark, even if it is lower than the original mark.

Grading Scheme and Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Questions about the Course and Contacting the Teaching Team

The teaching team contact information is located on the Homepage of the course (see Teaching Team).

For general questions about the course and content, please post to the weekly Course Questions Forums (OnQ). Feel free to help answer your peers' questions on this forum. Most questions are answered within 24 hours.

Please use the course email for inquires that are about the logistics of the course and a team member will typically respond within 24 hours. Note: If you have questions about course material you should bring those to a student help session or post them to the online forum.

Course email: in2stats@queensu.ca

Throughout this course, you may come upon some general questions about the course and assignments. If you think that your question may benefit other students, you are invited to post your question in the Course Questions discussion forum. Feel free to help answer your peers' questions on this forum. The teaching team will monitor this discussion forum and answer questions. Most questions are answered within 24 hours. Any other questions that you would prefer to share privately, please contact me or your TA at one of the emails listed at the top of this syllabus. The teaching team contact information is located on the homepage of the course.

Course Announcements

Throughout the course, we will routinely post course news in the Announcements section of the course homepage. We encourage you to actively check the course onQ main page for course announcements throughout the semester for reminders and additional course information or learning opportunities.

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.

Notice of Recording

While lectures for this course will be delivered in-person, classes may be recorded via auditorium lecture capture 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 image or voice through the video and audio recordings. By attending lecture, 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 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 website.

Course Feedback

At various points during the course, students may be asked to take part in a variety of feedback activities (such as questionnaires and exit tickets). This feedback enables the team to make any adjustments necessary to improve the learning environment. All surveys are anonymous, and directly related to activities, assessments, and other course material.

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 achieving full accessibility for people with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all their academic activities. The Senate Policy for Accommodations for Students with Disabilities was approved at Senate in November 2016. If you are a student with a disability and think you may need academic accommodations, you are strongly encouraged to contact the **Queen's Student Accessibility Services (QSAS)** and register as early as possible. For more information, including important deadlines, please visit the QSAS website.

Academic Consideration for Students in Extenuating Circumstances

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:

- Short-term physical or mental health issues (e.g., stomach flu, pneumonia, COVID diagnosis, vaccination, etc.)
- Responses to traumatic events (e.g., Death of a loved one, divorce, sexual assault, social injustice, etc.)
- Requirements by law or public health authorities (e.g., court date, isolation due to COVID exposure, etc.)

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances. For more information, please see the Senate Policy on Academic Consideration for Students in Extenuating Circumstances.

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. Arts and Science undergraduate students can find the Faculty of Arts and Science protocol and the portal where a request can be submitted. Students in other Faculties and Schools who are enrolled in this course should refer to the protocol for their home Faculty. For guidance on **submitting requests**, please see refer to the Resource Guides available on the Academic Consideration website under "Applying for Academic Consideration."

N.B: The COVID-19 pandemic is an evolving situation. If you have symptoms or are deemed a close contact of someone with COVID, please access our **COVID-Related Absence Reference Guide** on the Academic Consideration website. This guide will provide you with information on applying for consideration, the types of documentation (including non-medical documentation) you can use to support your request, as well as insight into how the Faculty office will assess these requests.

If you need to request academic consideration for this course, you will be required to provide the following name and email address to ensure it reaches our team accordingly:

Instructor/Course Coordinator Name: Sarah Yakimowski
Instructor/Course Coordinator email address: in2stats@queensu.ca

Students are encouraged to submit requests as soon as the need becomes apparent and to contact their Professors/Course Coordinators as soon as possible once Consideration has been verified. Any delay in contact may limit the Consideration options available.

Academic Integrity

Queen's students, faculty, administrators, and staff all have responsibilities for upholding the fundamental values of academic integrity: honesty, trust, fairness, respect, responsibility and courage. These values are central to the building, nurturing, and sustaining of an academic community in which all members of the community will thrive. Adherence to the values expressed through academic integrity forms a foundation for the "freedom of inquiry and exchange of ideas" essential to the intellectual life of the University (see the Senate Report on Principles and Priorities).

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and their behaviour conform to the principles of academic integrity. Information on academic integrity is available in the Arts and Science Calendar (see Academic Regulation 1), on the Arts and Science website, and from the instructor of this course. Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery, and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulation on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

You may benefit from visiting these websites for further tips on what constitutes plagiarism and how to avoid it.

- Avoiding Plagiarism: Paraphrasing
- Quoting and Paraphrasing

Copyright of Course Materials

The material on this website is copyrighted and is for the sole use of students registered in BIOL 243/GPHY 247/NURS 323/ KNPE251/ PSYC 202. The material on this website may be downloaded for a registered student's personal use but shall not be distributed or disseminated to anyone other than students registered in BIOL 243/GPHY 247/NURS 323/ KNPE251/ PSYC 202. Failure to abide by these conditions is a breach of copyright and may also constitute a breach of academic integrity under the University Senate's Academic Integrity Policy Statement.

Privacy Statement for Instructors Who Use Third-Party Software in their Course

This course makes use of Top Hat for interactive questions in class. Be aware that by logging into the site, you will be leaving onQ, and accessing Top Hat's website and the Top Hat application software. Your independent use of that site*, beyond what is required for the course (for example, purchasing the company's products),* is subject to Top Hat's terms of use and privacy policy.

You are encouraged to review these documents using the link(s) below before using the site.

You are encouraged to review the applicable privacy statements before using the site.

1. General information - https://tophat.com/students/
2. Accessibility - https://tophat.com/company/legal/accessibility-top-hat/
3. Security - https://tophat.com/company/security/
4. Terms and Conditions - https://tophat.com/company/legal/

Technology Requirements

Microsoft Windows Client
Vista/Windows 7/Windows 8
Intel Core 2 Duo processor

4 GB RAM
Soundcard with speakers and microphone or preferably a headset
Webcam
Mac Client
OS X 10.8 or higher
Intel i5 processor
4 GB RAM
Internal, USB or external iSight microphone or preferably a headset
Webcam
Supported Browsers
Chrome (latest version)
Firefox (latest version)
Safari (latest version on 64-bit Intel processors only)
Internet Connection
Wired high speed access: Cable or better
(Wi-Fi is not recommended) A minimum download speed of 10 Mbps and up to 20 Mbps for multimedia is recommended. Click here for an Internet speed test.

Java
Latest version
Media Player
Flash (latest version)
Adobe Reader (Latest Version)
For technology support ranging from setting up your device, issues with onQ to installing software, contact ITS Support Centre

Calculator Policy *[mandatory if applicable]*

As noted in Academic Regulation 9.2, "Calculators acceptable for use during quizzes, tests and examinations are intended to support the basic calculating functions required by most Arts and Science courses. For this purpose, the use of the **Casio 991 series calculator** is permitted and is the only approved calculator for Arts and Science students."