

COURSE DESCRIPTION

The purpose of this course is to improve your numeracy and critical thinking skills to help you make better decisions in both your personal and professional life. To achieve this, you will learn about probability, how to make sense of raw data, how best to describe data to others, and how to solve problems and test predictions using statistics. The components of this course have been designed with care to maximize your opportunities to learn in an engaging and supportive environment.

We look forward to exploring the often counterintuitive world of statistics with you.

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.

UNIVERSITY OPERATING DATES

Jan. 11	Classes start
Jan. 22	Last day to add courses Last day to drop courses without financial penalty
Mar. 5	Last day to drop courses without academic penalty
Apr. 9	Classes end
Apr. 14-30	Exam period

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 be able to draw valid conclusions.
5. Apply knowledge of statistics and research design (e.g., sampling) to critically evaluate research findings.

TOPICS

Module	Topic
0	Course Overview

1	Anatomy of a Statistical Study
2	Study Designs and Sampling
3	Descriptive Statistics
4	Visualizations
5	Probability
6	Sampling Distributions
7/8	Hypothesis Testing and T-tests
9	Chi-Square Test
10	Linear Regression
11	Single-Factor ANOVA
12	Two-Factor ANOVA

COURSE MATERIALS

There are two types of course materials (both 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 rate [here](#). Note that no royalties are collected on this ebook.
2. Case-study videos and software guides will be available in onQ free of charge. The course uses Microsoft Excel and RStudio, both of which are free for students.

Arts and Science Calculator Policy

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**. This inexpensive calculator sells for around \$25 at the Queen's Campus Bookstore, Staples and other popular suppliers of school and office supplies.

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)
- Tutorials: 1.5 hours
- Software Guides: 1 hour
- Additional Practice: as needed

WEIGHTING OF ASSESSMENTS

Assessment	Location	Weight	Learning Outcomes	Content Elements
Software Skills Quizzes (x3)	Online	12%	1-5	Software Guides
Weekly Quizzes	Online	14%	1-4	Online modules, Software Guides
Tutorial Activities	Tutorial	24%	1-5	Incorporates all content
Term Tests (x2)	Lecture	20%	1-4	Online modules, Case study videos, Practice Problems
Final Exam	TBD	30%	1-5	Online modules, Case study videos, Practice Problems

Location and Timing of Final Examinations

As noted in Academic Regulation 8.2.1, “the final examination in any class offered in a term or session (including Summer Term) must be written on the campus”; **however, because of the current situation (COVID-19) all exams will be moved to an online format. Final exams will still take place at the end of the appropriate term or session at the time scheduled by the Examinations Office.** The exam period is listed in the key dates prior to the start of the academic year in the Faculty of Arts and Science Academic Calendar and on the Office of the University Registrar’s webpage. A detailed exam schedule for the Fall Term is posted before the Thanksgiving holiday; for the Winter Term it is posted the Friday before Reading Week, and for the Summer Term the window of dates is noted on the Arts and Science Online syllabus prior to the start of the course. 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.

ASSESSMENTS AND ACTIVITIES DESCRIPTION

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 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 online modules, self-assessment and software 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 synchronous (live) tutorial activities in the course. Each of these are completed in a virtual group of 3-4 students. The tutorials are performance-based activities designed to reinforce concepts from all aspects of the course. These activities are intended to help you see the utility of statistics in your respective discipline.

Please note the following important policies related to online group tutorials.

Each week you will sign up for one tutorial section that works with your schedule. You must attend the tutorial that you signed up for 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). The tutorials are capped, so please sign up early if you have constraints in your weekly schedule. You can change your tutorial at any point by unenrolling and then signing up for a new tutorial. However, only do this if there is space in another tutorial. There is enough space for all students to sign up for a tutorial over the week, but once the week starts some tutorials will become full. If you enrol late, or unenroll from a tutorial during the week, and cannot find a new spot, you will not be able to complete the tutorial and will receive a zero grade. See the Timeline and Live Tutorials and Help Sessions page for tutorial details and due dates.

Term Tests

The two term tests (2 x 10%) will be written in Week 6 and Week 10 (see the Timeline for exact dates). Term Test 1 covers material Weeks 1-5 and Term Test 2 covers materials from Weeks 1-9 with emphasis on Weeks 6-9. Term tests will be multiple choice and short answer. Each term test will cover material from the online modules, case study videos, 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 online modules, case study videos, module practice problems and elements of the tutorials.

Exam Dates

The specific dates for each exam will be announced later in the term by the Registrar's office. Once the exam schedule has been finalized the exam date will be posted on your SOLUS account.

Please note that the Senate Policy on Academic Consideration for Students in Extenuating Circumstances is applicable during the final examination period. In the Faculty of Arts and Science, students who are too ill to write the examination or are experiencing extenuating circumstances are being directed to the Academic Consideration Request Portal (ACRP) to submit a request for consideration.

Assessment Accommodations

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 QSAS Accommodation Letter or STAA Form" 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 synchronous (live) tutorial times indicated on the Live Sessions page. Since the live 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; however we open up the tutorial activity ahead of time so that you can prepare before coming to tutorial. You must have attended the virtual 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 at a scheduled time but in a location of your choosing. 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 Tests and Final Exam are written during scheduled times—please see the Course Timeline for details. We provide extra time (up to 20 min per 1 hour) in the design of the assessment. For example, most students take about 80 minutes to complete the term tests, but we schedule 2 hours. If you require extra time beyond 20min/hr for an approved accommodation, we will gladly add that to your test once you submit your QSAS accommodation (see Accommodations in the Policies section below, or click the blue Accommodations button on the course homepage).

If you cannot write a term test and have an approved academic consideration, your final exam will be reweighed to include the weight of the term test. For example, if you miss the first term test (worth 10%), the final exam will increase from 30% to 40%. There are no makeup term tests because the final exam is cumulative and affords you the opportunity to demonstrate the knowledge that you would have otherwise exhibited in the term test(s).

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.

Late Policy

Tutorial activities are due at the end of your scheduled tutorial. The late penalty is 10% per day.

GRADING

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

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, please post to the weekly Course Questions Forums. Feel free to help answer your peers' questions on this forum. Most questions are answered within 24 hours.

Please use the course email for inquiries that are about the logistics of the course, such as where to find due dates, or where your exam is written. A Teaching Assistant will typically respond within 24 hours. **Note:** If you have questions about course material you should bring those to a help session or post them to the online forum.

Course email: in2stats@queensu.ca

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 online learning environment. Additional student feedback will be sought throughout the course. All surveys are anonymous, and directly related to activities, assessments, and other course material.

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

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.

COPYRIGHT

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ACCESSIBILITY/ACCOMMODATIONS

Queen's University is committed to achieving full accessibility for all students. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to

participate in all of 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 (click [here](#)).

To register your academic accommodation for this course, please select the Accommodations button on the course homepage and follow the instructions.

ACADEMIC CONSIDERATIONS FOR STUDENTS IN EXTENUATING CIRCUMSTANCES

Queen's University is committed to providing academic consideration to students experiencing extenuating circumstances that are beyond their control and are interfering with their ability to complete academic requirements related to a course for a short period of time. Click [here](#) to view the Senate Policy on Academic Consideration for Students in Extenuating Circumstances.

Please see the Academic Consideration Requests button on the course homepage to apply for an academic consideration in this course. Note that you will be taken to the student request portal where you will be required to provide the name and email address of the instructor/coordinator. For this course, please be sure to use the following email address: in2stats@queensu.ca.

Exemption for Academic Consideration or QSAS Accommodation

Students may be exempted for up to four (4) tutorials and/or quizzes per term for approved academic considerations or ongoing/chronic conditions per Letters of Accommodation (LOA) issued by QSAS. If you require exemption for more than 4 tutorials and/or quizzes, an alternative assessment may be provided.

ACADEMIC INTEGRITY

Academic integrity is constituted by the six core fundamental values of 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.

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments 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.

COMPUTER 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

Supported Browsers

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

Internet Connection

Chrome (latest version)	Wired high speed access: Cable or better
Firefox (latest version)	(wifi is not recommended)
Safari (latest version on 64-bit Intel processors only)	

Java	Media Player	Adobe Reader
Latest version	Flash (latest version)	Latest Version

STUDENTS STUDYING OR TRAVELLING ABROAD

If you plan to travel, we strongly recommend that you confirm Internet availability in your host country prior to departure. In the past, students in other countries have been blocked from accessing certain websites relevant to their courses, as well as onQ. It is the responsibility of all students to book travel around course work, as we cannot change the format or timing on assessments or assignments as a result of travel plans.