

Official Course Outline Information

Course Name: Introduction to Applied Statistics**Course Code:** STAT 1151**Version #:** V1.24**Instructor:****Email:****Office Hours:** See the General Course Description on Moodle**How to Contact Your Instructor:** By Email or via misiwe (formerly called Moodle)

Official College Calendar Description:

This course provides the basic principles of statistics, the skills for solving elementary statistical and probability problems, and hands-on experience with well-known statistical software. Basic methods for collecting data are introduced. Students will learn the main tools of descriptive statistics to visualize the collected data, analyze data distributions, and establish correlations and regressions between random variables. Also, students will learn the main tools of inferential statistics to estimate mean values and proportions by confidence intervals, hypotheses testing, and one-way ANOVA. Applications are taken from various areas, such as biology, environment, agriculture, forestry, food, business and economics, finances, medicine and health, education, crime and law, politics, social studies, psychology, sports, entertainment, technology, transport, and employment,

Course Overview:

This course introduces the learner to data in statistics and their variation; how data are collected, stored, and organized to understand the cause and effect between treatments and outcomes; graphical visualization of the types of data in statistics and measures of the centre, spread, and shape of data distributions; correlation and regression relationships between two numerical variables; probabilities of events and formulas for their calculations; normal and binomial probability distribution models; surveys and sampling, and measuring their quality and bias; sampling distributions of sample means and proportions; calculating confidence intervals for means and proportions; testing statistical hypotheses for means and proportions; goodness of fit; independence and homogeneity tests for categorical variables; the ANOVA method for comparing several means; and proper experimental design.

This course adheres to all college policies (see the college calendar).

Credits: 3**Prerequisites:** Mathematics 30-1 or 30-2**Total Course Hours:** 45 hrs**Structure of Hours:** Lecture: 45 hrs Lab: 18 hrs Other: 0 hrs

Note: Course hours are based on the number of credits. Students may need to budget two to three times this number of hours to complete the course successfully.

Total Number of Weeks: 16**Course Meeting:** Singhmar Centre 3-091 (lectures), CELT B-223 (labs)**Delivery Mode:** In person/Blended**Faculty:** Faculty of Arts and Sciences**Program:** Arts & Sciences Diploma Program

Course Goals/General Learning Outcomes:

Upon successful completion of this course, students will be able to

1. Analyze data from various professional and life areas by the methods of statistics.
2. Describe data frequencies and distributions, their shape, spread and centre.
3. Make predictions for one variable from another based on a relationship between them.
4. Solve simple probability problems.
5. Estimate means and proportions by confidence intervals and statistical hypotheses.
6. Interpret statistical results in real-life terms.

Course Units/Topics:

This course consists of the following units/topics:

1. Data and Randomness
2. Visualizing Data and Describing Distributions
3. Summaries of Numerical Distribution
4. Exploring Relationships between Numerical Variables by Correlation and Regression Analysis
5. Introduction to Events and Probabilities, Modelling Variation with Probability
6. Modelling Random Events by Normal and Binomial Models
7. Survey Sampling and Inference
8. Confidence Intervals and Testing Hypotheses for Population Means
9. Confidence Intervals and Testing Hypotheses for Population Proportions
10. Relationships between Categorical Variables
11. Comparing Several Means by One-way Analysis of Variance (ANOVA)

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Required Textbooks, References, Materials:

Gould, R., Ryan, C., Stallard, J., & Boue, M. (2016). *Introductory statistics: Exploring the world through data*. Toronto, ON: Pearson Canada.

Pearson STAT 1151 Statistics I

STAT 1151 Lab Worksheets

Recommended Resources:

Gould, R., Ryan, C., Stallard, J., & Boue, M. (2016). *Introductory statistics: Exploring the world through data*. Toronto, ON: Pearson Canada.

Pearson STAT 1151 Statistics I

STAT 1151 Lab Worksheets

Course Evaluation:

Mark distribution for the course will be as follows:

Online Homework Assignments	10%
Lab Assignments	20%
Midterm Exam I	20%
Midterm Exam II	20%
Final Exam	30%
Total	100%

Passing Level/Grading Scale:

The passing grade for this course is 50% (D).

Marking and Grade Conversion

Letter Grade (post-secondary programs)	Grade Point Value (post-secondary programs)	Percentage Scale (Alberta Education)	Description
A+	4.0	95–100	
A	4.0	90–94	Excellent
A–	3.7	85–89	
B+	3.3	80–84	
B	3.0	75–79	Good
B–	2.7	70–74	
C+	2.3	67–69	
C	2.0	64–66	Satisfactory
C–	1.7	60–63	
D+	1.3	55–59	
D	1.0	50–54	Poor
F	0.0	0–49	Failure

Inclusive Culture:

At NorQuest College, we are committed to fostering a space where both learners and staff can engage in honest conversations in a respectful, responsible, and thoughtful manner without fear of repercussions. A NorQuest education is inclusive, and our learners are supported and preparing to meet the needs of a diverse society with hands-on training with people from a variety of cultures, religions, and genders. For some learners, this may challenge your values and beliefs. We understand and have supported many learners to stretch their comfort zones to find a balance between job success and cultural or religious beliefs.

As part of the NorQuest community, in your programs, classrooms, labs, clinical work, work-integrated learning (WIL), and practicums, you will encounter and work with individuals from other cultures and religious backgrounds and of all genders and gender identities, including those who are part of the 2SLGBTQIA+ community. You will also meet and work with people with sensory sensitivities, who are neurodivergent, or who have different abilities, as well as individuals who may differ significantly in age or may have special considerations or restrictions around clothing and jewellery. Our community also includes people from a variety of socio-economic classes, castes, and income levels.

We celebrate our differences, and we value continuous growth and learning from each other. We create a sense of belonging where we do not judge anyone based on gender

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identity or expression, biological sex, sexual orientation, race/ethnicity, religion, linguistic and/or cultural background, age, physical or mental ability, or any other aspect of one's person. NorQuest does not tolerate bullying, racism, or harassment. If you or another learner or staff member are subjected to any of these actions, your voice will be heard and taken seriously. It is everyone's responsibility to nurture a space where each person can feel safe and respected.

NorQuest College is committed to providing an environment that expects and promotes ethical behaviour in all aspects of college activities. This includes ensuring that employees, learners, and volunteers can confidentially and without fear of retaliation seek advice and/or disclose alleged wrongdoing or improper activity. The Office of Safe Disclosure provides a safe space to hear NorQuest community members' equity, human rights, and discrimination concerns, and other reports of wrongdoing or improper activity. All learners, employees, and other members of the NorQuest community are welcome to access these services.

To contact the Safe Disclosure Office, individuals are encouraged to make an appointment to meet with an advisor by emailing disclosure@norquest.ca.

Anti-Racism Statement

NorQuest College is working towards becoming an anti-racist institution. As such, we are making efforts to develop anti-racist curriculum and classroom learning experiences. This means using resources from multiple perspectives and equity deserving groups, learning from each other's lived experiences, and discussing anti-racism in our classrooms.

Integrating an anti-racist approach in the way we frame and implement courses and programs is central to achieving our desired state as an institution. It aligns with our college vision and *Deans' Joint Commitment to Anti-Racism for Equity*. Embedding anti-racism in teaching and learning practice will contribute to anti-oppressive and equitable learning experiences and outcomes for all learners. Everyone is invited to support our learners to succeed in a diverse and multicultural learning space, workplace, and society.

Skills of Distinction:

At NorQuest College, learners develop Skills of Distinction as a part of belonging to the NorQuest community. Through the Circle of Courage, learners build competence in Resilience, Inclusion, and New Ways of Thinking. These human skills prepare all learners for the changing workforce and the changing world.

Course Policies and Expectations:***Statement of Conduct and Expectations***

NorQuest College is committed to maintaining high standards of non-academic and academic performance and integrity in order to foster a learning environment conducive to the personal, educational, and social development of its students. This commitment is founded upon the principles of fairness, trustworthiness, honesty, respect, and responsibility. The college expects that its students will be guided at all times by these principles in the work that they submit and the behaviour in which they engage.

It is the student's responsibility to be familiar with and follow NorQuest College policies and procedures, including the [Student Code of Conduct](#). Student policies can be viewed on the [college website](#). Policies specific to a program will be in the student program manual. If you have questions, please ask your instructor.

Academic Integrity

NorQuest College is committed to maintaining high standards of academic performance and integrity, and it is the responsibility of all members of the college community to uphold these standards. Academic misconduct may be defined broadly as the giving, taking, or presenting of information that dishonestly aids an individual or group in the determination of academic merit or standing. Common examples include, but are not limited to, plagiarism and cheating, which includes the unethical use of generative artificial intelligence (AI) tools (such as ChatGPT, Grammarly, etc). Allegations of academic misconduct are serious and may lead to sanctions such as mark reduction, course failure, or withdrawal from the course or program.

Plagiarism

Plagiarism is a form of academic misconduct that occurs when someone presents, as one's own, work that has been created by another. It is a serious offence and can result in suspension or expulsion from the college.

There is no tolerance for academic misconduct in this course. Any student caught plagiarizing will be penalized, and the incident will be recorded in the student's file. Multiple offences may result in the student's withdrawal from the course and/or program. Students are encouraged to familiarize themselves with the NorQuest College [Student Judicial Affairs Policy](#) and avoid any behaviour that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts, and/or participation in an offence.

Student Misconduct

Academic misconduct may be defined broadly as the giving, taking, or presenting of information that dishonestly aids an individual or group in the determination of academic merit or standing. Examples include, but are not limited to, plagiarism and cheating.

Non-academic misconduct may be defined broadly as any behaviour that adversely affects the learning of others or the college's educational mission, violates civil or criminal statutes, threatens the safety or well-being of members of the NorQuest community, or violates the ethical standards set by professional associations or the workplace standards set by practicum, clinical, or volunteer placement agencies.

Allegations of academic or non-academic misconduct will be adjudicated according to Student Judicial Affairs Policy and procedures, and may result in sanctions ranging from mark reduction, remediation, course failure, or withdrawal from the course or program. For more information, please talk to your instructor or contact the Office of Student Judicial Affairs at osja@norquest.ca

Use of Generative AI

Since critical reading, writing, and thinking skills are fundamental to the learning outcomes of this course, all assignments must be prepared by the student and thereby demonstrate original work. Developing strong competencies in these areas will prepare you for your future studies and careers. Therefore, use of ChatGPT or any other generative AI tools to complete assignments is not permitted and will be treated as plagiarism. Assignments containing characteristics of AI-generated text or generated solutions will not receive credit and may be reported to the OSJA for misconduct.

Attendance Policy

Students are expected to arrive on time, and to remain for the duration of the class. Please come to class having completed any assigned homework/tasks and prepared with the appropriate materials. If you are absent from class, it is your responsibility to complete the assigned homework/tasks listed in the course schedule and to check for any new information, documents, or materials.

Learning Technologies

This course uses misiwé pehtâkwan (formerly called Moodle), NorQuest's online Learning Management System, as a repository for course materials (<http://myclass.norquest.ca>). Upon registration, you will receive login information via your NorQuest email account. Course materials may include review materials, handouts, course outline, PowerPoints, notices from your instructor, reading schedule, assignments, and exams. It is important

that you log in and review the course materials and information regularly. For technical support, please contact the [Student Service Desk](#).

Student Support

Students who have a disability affecting mobility, vision, hearing, learning, or mental or physical health and who require accommodations in this course are advised to discuss their needs with a Student Support Specialist at NorQuest College [Student Services](#).

Technology and Electronics Policy

Please note that the use of laptops, mobile phones, and other electronic devices during class and exams for private/personal information or communications is not permitted, as it is disruptive to the learning environment. Misuse of electronics during class time will result in the deduction of participation marks. Students who persist in disruptive behaviours during class will be asked to leave.

How to Submit Assignments

Your instructor will provide specific submission instructions for each assignment.

Late Assignment Submissions

Assignments are due on the scheduled date, per the course schedule and assignment instructions. Late assignments will be deducted 15% per day, including weekends. Exceptions will only be made in cases of illness or personal emergency. Please contact the instructor via email as soon as possible so accommodations can be made. Note: extensions cannot be granted retroactively (ie: after the assignment deadline has passed), and assignments will not be accepted after the class set has been marked and returned. Please see the misiwe Course Calendar and Course Schedule for assignment due dates.

Communications Policy

Email: Email and misiwe (Moodle) are the official method of communication between students and instructors, and for most interactions at the College. The Instructor checks their NorQuest email accounts and misiwe messages routinely during regular business hours, and will respond within 24-48 hours when possible. Please ensure you use appropriate etiquette and include your full name, course section, and student ID when corresponding with instructors and other College personnel.

MS Teams and other than misiwe (Moodle) direct messaging tools: Direct messaging through MS Teams or any other platform is not an official or appropriate method of communicating with your instructor. Please note that any direct messages sent through Teams or other applications will not receive a response

Meetings: If course questions/concerns cannot be resolved through email, the instructor is available to meet with students on a limited basis. To request a meeting with an

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instructor, please email them to arrange a date, time, and platform/location in advance. Note that the instructor may not be available for in-person meetings outside of class.

Course Schedule:

Please note that this schedule is subject to change. Any changes or cancellations will be communicated by your instructor. It is your responsibility to check your NorQuest email account and your misiwe (Moodle) account regularly for relevant messages.

Date	Unit/Topic/Reading	Assessment

Final Exam Date and Location: [Click here to enter text.](#)

Bring to Final Exam: Student ID, standard scientific calculators, pens

Additional Information:

Online Homework Assignments: Online homework assignments are weekly assignments, unless otherwise specified by your instructor. They are assigned on the Pearson platform (external to Moodle) after the lecture. It is students' responsibility to check the times of

assigning and the deadlines of submission on the Pearson platform, as the latter is not connected to Moodle. In case of technical difficulties, please, contact the technical support as specified on the Pearson platform as soon as possible and provide to your instructor screenshot(s) that clearly indicate(s) that you experience technical difficulties and that you contacted Pearson technical support for fixing them.

Please, register only in the Pearson online class, for which you are provided a course ID from your instructor, which authorizes your enrollment. If you register in another online class, for which you are not provided a course ID by your instructor, and therefore you are not authorized, this may result in zero marks on your online homework assignments and/or eventual student misconduct.

Lab Projects: Lab projects should demonstrate not only that the students grasp the material, but also that they can present the project topic they are tasked to investigate as a well organized, thorough, correct, logical, good looking and properly formatted group project. The lab projects are assigned on Moodle. However, the lab work is done on R Studio Cloud platform (external to Moodle). **Lab projects are group work** and students are assigned to each group by the instructor. Each student works on their own individual account on R Studio Cloud and the members of each group may exchange between each other the lab work by email. The lab projects are submitted for marking as assignments on Moodle. The lab projects should start with a title page that clearly states the number of the lab project, the title of the lab project, the names of the students in the group, and what part of the project each student did. **No individual submissions are allowed.** It is students' responsibility to check the times of assigning and the deadlines of submission on Moodle. Late submissions of lab assignments result in 15% penalty deduction per day, including weekends, unless a valid reason is specified.

Exams: For this course, **all examinations (midterm and final exams) must be written in person.** Student ID is required during all the midterm and final exams. Students must arrive punctually. If a student is late for an exam, the instructor has the discretion to decide whether or not the student will be allowed to write the exam. Once the exam has commenced, students must remain in the room for at least 30 minutes before they can leave. Only calculators approved by the instructor will be allowed in the exam room. **The exams are not open book. Any devices capable of external communication, internet, and/or taking pictures, e.g. cellphones, smart watches, iPods, Bluetooth-enabled devices, cannot be used for exams of any type.** Laptops, other computer devices, and Internet are not allowed during the exams of any type. Students should bring their own pens/pencils and calculators. Only standard scientific calculators are allowed. Exchanging of calculators between students during exams is not allowed. Exam booklets will be provided. Permission to use the washroom during exams is at the discretion of the instructor and may require accompaniment.

Missed Midterm Exams: A student who misses a midterm exam must contact the instructor either directly or via email at the earliest possible time, and in all cases within 24 hours of the missed exam, with a valid explanation, supported with appropriate documentation if needed. If a student's absence is excused, the student may be given a chance to write a deferred exam with the Testing Services within the next five (5) days, or the weight of the midterm exam may be transferred to the final exam. A mark of zero will be given in situations where unsatisfactory explanation and/or no supporting documentation is available.

Originated By: Dimitre Dimitrov, PhD, Math & Stats Instructor

Last Revised By: Dimitre Dimitrov, PhD, Math & Stats Instructor

Revision Date: November 29, 2024

Approved By (Program Chair or Dean): Dana Wight, PhD

Minimum Instructor Requirements: Master's degree in Mathematics (or related discipline)

Prior Learning Assessment Recognition (PLAR): Yes

Credit can be awarded for this course through PLAR

Methods of Obtaining PLAR: Transfer Credit

Transferability to Other Institutions: See [ACAT](#) for course transferability details

NOTE: Students are advised to keep course outlines in personal files for future use. These may be used to apply for transfer of credit to other educational institutions. A fee may be charged for additional or replacement copies.

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