

# STAT 1F92 (2023 – 2024) Course Outline



## Instructor

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### Lecture Time Room

Tuesday 1:30pm – 2:50pm TH247  
Thursday

- All assignments will be done **independently** and are submitted electronically via Brightspace/Crowdmark at 11:55pm on the due date
- Please don't email your assignment inquiries, instead, use the office hours
- **At least 30% on the exam is required to earn the credit**

## Course Mark Distribution

Entry	Weight	Due Date
Assignment 01	5%	September 29th, 2023
Assignment 02	5%	October 27th, 2023
Assignment 03	5%	December 03rd, 2023
Assignment 04	5%	January 26th, 2024
Assignment 05	5%	March 1st, 2024
Assignment 06	5%	April 2nd, 2024
Midterm 1	10%	Saturday November 4th, 2023 7:00pm to 8:00pm TH247 and TH325
Midterm 2	10%	Tuesday March 5th, 2024 1:30pm to 2:45pm TH247
Progress Exam	20%	December 20th, 2023 Three hours
Final Exam	30%	TBA Three hours

- **Course website:** <https://brightspace.brocku.ca/>
- **Office hours:** Mondays 4:00pm – 6:00pm in MCJ 434 (Mathematics Learning Centre)
- **Course prerequisite:** One grade 11 mathematics credit and designed for non-science majors
- **Course restriction:** Math majors are not allowed to take this course
- **Course textbook:** Statistics: Informed Decisions Using Data (6th edition) with ISBN as [9780136679516](#) (with Mylab) or [9780135780183](#) (Hard cover)
- **Required Software:** Microsoft Excel (Free! You have access to it through your Brock email)
- **Help Desk:** The Mathematics Learning Centre (MCJ 434) has hours dedicated for extra help and the schedule will be posted soon.

## Learning Objectives

- Summarize data numerically and graphically
- Describe the relation between two variables
- Compute and interpret the linear correlation coefficient
- Compute and interpret probabilities using the empirical method and the classical method
- Identify discrete probability distributions
- Compute the mean and standard deviation of a binomial random variable
- Locate proportions, probabilities, or percentiles for normal random variables
- Describe the distribution of the sample mean for normal population and non-normal population

- Construct and interpret a confidence interval for the population proportion
- Determine the null and alternative hypotheses and state conclusions to hypothesis tests
- Test hypotheses for two samples
- Perform a goodness-of-fit test
- Test a hypothesis regarding three or more means using one-way (Analysis of variance) ANOVA
- Conduct inference on the Least-Squares Regression Model

## Schedule of Topics

The schedule below is a **rough** outline for the course and may change as the semester unfolds:

Component	Objective
Component 01 Sep 06 – Sep 19	<ul style="list-style-type: none"> <li>▪ <b>Descriptive Statistics</b></li> <li>▪ Overview of Statistics (Chapter 1)</li> <li>▪ Section 2.2 (Organizing Quantitative Data),</li> <li>▪ Sections 3.1 (Measures of Central Tendency), 3.2 (Measures of Dispersion), 3.4 (Measures of Position and Outliers) and 3.5 (The Five-Number Summary and Boxplots)</li> </ul>
Component 02 Sep 20 – Oct 03	<ul style="list-style-type: none"> <li>▪ <b>Linear Regression</b></li> <li>▪ Sections 4.1 (Scatter Diagrams and Correlation), 4.2 (Least-Squares Regression) and 4.3 (Diagnostics on the Least-Squares Regression Line)</li> <li>▪ <b>Assignment 01 due September 29th, 2023</b></li> </ul>
Component 03 Oct 04 – Oct 31	<ul style="list-style-type: none"> <li>▪ <b>Probability</b></li> <li>▪ Sections 5.1 (Probability Rules), 5.2 (The Addition Rule and Complements), 5.3 (Independence and the Multiplication Rule) and 5.4 (Conditional Probability and the General Multiplication Rule)</li> <li>▪ <b>Assignment 02 due October 27th, 2023</b></li> </ul>
Reading Week October 09 – October 13	
Component 04 Nov 01 – Nov 14	<ul style="list-style-type: none"> <li>▪ <b>Probability Distributions</b></li> <li>▪ Section 5.5 (Counting Techniques)</li> <li>▪ Sections 6.1 (Discrete Random Variables) and 6.2 (The Binomial Probability Distribution)</li> </ul>
Component 05 Nov 15 – Nov 29	<ul style="list-style-type: none"> <li>▪ <b>Normal Distribution</b></li> <li>▪ Sections 7.1 (Properties of the Normal Distribution), 7.2 (Applications of the Normal Distribution) and 7.3 (Assessing Normality)</li> <li>▪ Progress exam review</li> </ul>
Nov 30 – Dec 05	<ul style="list-style-type: none"> <li>▪ <b>Ensuring above material is covered and Exam Review</b></li> <li>▪ <b>Assignment 03 due December 03rd, 2023</b></li> </ul>
Progress exam Period December 08 – December 20	

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Component 06 Jan 08 – Jan 19	<ul style="list-style-type: none"> <li>▪ <b>Central Limit Theorem and Confidence Intervals</b></li> <li>▪ Sections 8.1 (Distribution of the Sample Mean), 8.2 (Distribution of the Sample Proportion)</li> <li>▪ Section 9.1 (Estimating a Population Proportion)</li> </ul>
Component 07 Jan 22 – Feb 02	<ul style="list-style-type: none"> <li>▪ <b>Hypothesis Testing</b></li> <li>▪ Section 9.2 (Estimating a Population Mean)</li> <li>▪ Sections 10.1 (The Language of Hypothesis Testing) and 10.2 (Hypothesis Tests for a Population Proportion)</li> <li>▪ <b>Assignment 04 due January 26th, 2024</b></li> </ul>
Component 08 Feb 05 – Feb 16	<ul style="list-style-type: none"> <li>▪ <b>Hypothesis Testing Continued</b></li> <li>▪ Sections 10.3 (Hypothesis Tests for a Population Mean) and 10.4 (Hypothesis Tests for a Population Standard Deviation)</li> </ul>
Reading Week February 19 – February 23	
Component 09 Feb 26 – Mar 08	<ul style="list-style-type: none"> <li>▪ <b>Inference on two Samples</b></li> <li>▪ Sections 11.1 (Inference about Two Population Proportions), 11.2 (Inference about Two Means: Dependent Samples) and 11.3 (Inference about Two Means: Independent Samples)</li> <li>▪ <b>Assignment 05 due March 1st, 2024</b></li> </ul>
Component 10 Mar 11 – Mar 22	<ul style="list-style-type: none"> <li>▪ <b>Chi-square Tests</b></li> <li>▪ Sections 12.1 (Goodness-of-Fit Test) and 12.2 (Tests for Independence and the Homogeneity)</li> </ul>
Component 11 Mar 25 – Apr 05	<ul style="list-style-type: none"> <li>▪ <b>ANOVA Inference on Regression</b></li> <li>▪ Section 13.1 (Comparing Three or More Means <i>i.e.</i>, One-Way Analysis of Variance)</li> <li>▪ Sections 14.1 (Testing the Significance of the Least-Squares Regression Model) and 14.2 (Confidence and Prediction Intervals)</li> <li>▪ Final exam review</li> <li>▪ <b>Assignment 06 due April 2nd, 2024</b></li> </ul>
Final exam Period April 10 – April 23	

## Important Dates

- The first midterm for this course will be November 4th, 2023 from 7:00pm to 8:00pm in TH247 and TH325 (the second midterm will be announced later)
- The day and time of the progress exam and final exam are assigned by the registrar's office and will be announced later
- Please have a look at Brock University's [Important Dates](#) page
- **January 19, 2024** is the last day to withdraw from this course *without* academic penalty

## Assignment Policies

- Assignments will typically have typical solve the questions to solve by hand and a component to complete on Excel
- **Assignment submission:**
  - It is your responsibility to ensure all the files are submitted appropriately
  - In general, failing to follow assignment instructions may result in mark deduction
  - The steps for assignment submission are included at the end of each assignment instruction
  - An assignment will be due at 11:55pm (Eastern time) on the due date found on Brightspace
  - Always back up your assignments by emailing them to yourself using your Brock email
- **Late assignments:**
  - No late assignments will be accepted
- **Unsubmitted assignments:**
  - Unsubmitted assignments will automatically receive 0%
  - Ensure you keep track of when assignments are due!
- **Requesting an assignment re-grade:**
  - Please contact the instructor for a re-grade within one business week after receiving the feedback
  - The assignment will be regraded completely which means the grade might be lower, higher or stay the same

## Academic Integrity

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- Academic misconduct is a serious offence
- The principle of academic integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study
- Students should consult Section VII, "Academic Misconduct", in the "Academic Regulations and University Policies" entry in the [Undergraduate Calendar](#) to view a fuller description of prohibited actions, and the procedures and penalties
- Information on what constitutes academic integrity is available at [Brock University Academic Integrity Website](#)
- The following are minimum penalties usually imposed in academic misconduct cases in Faculty of Mathematics & Science. Please be aware that the Associate Dean, Undergraduate Programs, may assign different penalties than those listed here, depending on the details of individual cases. Also note that cheating on exams carries significantly higher penalties:
  - First offence: Zero grade on assignment, additional penalty of 100% of the weight of the assignment to be subtracted from the final grade, mandatory completion of the A-Z Learning Services Academic Integrity workshop
  - Second offence: Zero grade on assignment, additional penalty of 200% of the weight of the assignment to be subtracted from the final grade, 4-month suspension
  - Third or additional offence: Zero grade in course, 1-year suspension, permanent removal from major program
  - Cheating on exams: Zero grade in course, including for first offenses
- Any type of cheating, plagiarism or academic misconduct will **not** be tolerated
- Copying solutions from ChatGPT or other website(s) is **not** allowed and will be considered as cheating
- Note that any instances of suspected academic dishonesty will be subject to a formal investigation and that all offenders will be reported to the Associate Dean, Undergraduate Programs who will

determine the appropriate penalty

- **Collaboration:** You are encouraged to discuss general ideas and compare answers with other students, however, you must do your own numerical computation, algebraic steps and express ideas in your own words. To collaborate with other students and avoid academic misconduct:
  - You are allowed to discuss assignments amongst other students and write the general ideas
  - Once the meeting is over, **do not** take anything physical from the meeting such as a picture of the discussion nor the paper(s) used
  - Wait for at least 30 minutes before starting the assignment
  - This will ensure that your knowledge is based on what you have learned from the meeting

## Supporting Services

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Service	Phone Number	Email
Student Health Services	905 – 688 – 5550 x3243	N/A
Student Accessibility Services	905 – 688 – 5550 x3240	asksas@brocku.ca
Personal Counselling Services	1 – 833 – BROCK33	counselling@brocku.ca
Campus Security (emergency)	905 – 688 – 5550 x3200	security@brocku.ca
Campus Security (non-emergency)	905 – 688 – 5550 x4300	
(ITS) Help Desk	905 – 688 – 5550 x3778	N/A
Student Ombudsperson	<a href="https://brocku.ca/ombuds/">https://brocku.ca/ombuds/</a>	

## Course Communication, Extensions and Accommodations

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- The main medium of communication between the instructor and the student (and vice-versa) will be via Brock email address
  - Note that there are no make up midterms, instead, the weight of the missed test is added to the weight of the exam
  - A student is required to email the instructor as soon as possible when a midterm/exam is missed due to a medical/religious matter
  - The email must contain the appropriate documentation (the earlier the email the better)
    - The period of this short-term medical condition for academic consideration must fall within a 72-hour (3 day) period. The form must be submitted to the instructor either during your brief absence or if you are too unwell, within 24 hours of the end of your 3 day brief absence
    - In cases where a student requests academic consideration due to a medical circumstance that exceeds 72 hours (three days) and will impact their academic activities (*e.g.*, participation in academic classes, delay in assignments, etc.), or in the case of a final exam deferral, the [Student Medical Certificate](#) form must be signed by the student and the health professional as per process set out in the [Faculty Handbook III:9.4.1](#).
  - Based on the situation, the instructor and student will agree to an appropriate medium
  - Students with known accommodation are encouraged (but not required) to contact the instructor at the beginning of the course for keeping the appropriate accommodations required in mind

## Intellectual Property Notice

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All slides, presentations, handouts, tests, exams, and other course materials created by the instructor in this course are the intellectual property of the instructor. A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Brock's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.