

**INTRODUCTION TO STATISTICS**

**INSTRUCTOR:** TBA

**Desire to Learn (D2L):** <http://learn.viu.ca/>

The D2L site for the course contains valuable course information. Please visit the site frequently.

**OFFICE HOURS:**

**PREREQUISITE:** *Min. "C" in one of Pre-calculus 11, Foundations of Mathematics 11, Principles of Mathematics 11, or Applications of Mathematics 11.*

**CALCULATOR:** A **non-programmable** calculator (Example Sharp EL 520V or 531V) is allowed.

**CLASS:- TIME & LOCATION:** **TBA**

**COURSE DESCRIPTION:** An introduction to statistics course for the technology programs.

Here's a big-picture summary of the topics that will be explored in this course:

1. How to summarize and interpret different types of data.
2. How to investigate relationships between variables.
3. The role of randomness and probability in statistical studies.
4. How to use the data at hand to make inferences about the world at large.

Statistical software (Excel) is used to illustrate concepts and remove computational drudgery.

**Learning Outcomes:**

After successfully completing this course, the student should be able to:

- Distinguish between quantitative and categorical data and know which graphical and tabular techniques to use for each.
- Produce and interpret graphical displays for simple data sets.
- Calculate and interpret measures for the centre and spread of a data set.
- Identify how and when to use the Normal model.
- Identify when correlation and regression analyses are appropriate.
- Calculate and interpret correlation coefficient and regression line equations.

- Discuss issues associated with collecting and interpreting data from sample surveys and polls.
- Identify the role of randomization in sample surveys.
- Distinguish between an experiment and an observational study and the conclusions that can be drawn from each.
- Discuss the basic principles of experimental design.
- Carry out a basic simulation model.
- Calculate probabilities using Venn diagrams, tree diagrams, and the Addition and Multiplication rules.
- Describe the concepts of mutually exclusive events, conditional probability, dependent and independent events.
- Calculate probabilities using the Binomial, Poisson and Normal distributions.
- Discuss the concept of a sampling distribution.
- Describe the central limit theorem, and understand its relevance to statistical inference.
- Calculate and interpret confidence intervals for estimating population proportions and means.
- Determine appropriate sample sizes for estimating an unknown population proportion or mean.
- Conduct hypothesis tests for population proportions and means.
- Explain the meaning of  $P$ -values in hypothesis testing.
- Identify when and how to use the  $t$ -distribution.
- Conduct a Chi-Square test of independence.

**TEXTBOOK** : **STATISTICS *Principles and Methods***, 7<sup>th</sup> edition by R. Johnson and G. Bhattacharyya

**COURSE CONTENT:** Topics to be covered include but not limited to:

1. Descriptive Statistics (Graphs and Numerical Summaries) - Chapters 1 and 2 (approx. 2 weeks)
2. Probability and Probability Distributions - Chapters 4, 5 and 6 (approx.. 4 weeks)
3. Sampling Distributions - Chapter 7 (approx. 1 week)
4. Statistical Inference - Chapters 8 and 9 (approx. 3 weeks)
5. Correlation, Regression and Chi-Square Tests - Chapters 3, 11 and 13 (approx. 3 weeks)

**Lectures:** I encourage you to attend lectures regularly. If you miss a class, it is your responsibility to find out what material you missed and do your best to learn it. Don't hesitate to come to me for help.

**PLEASE DO NOT CHAT IN CLASS! TEXTING IS NOT ALLOWED IN CLASS**

**Labs:** Laboratory assignments (approximately 7) are designed to exercise the skills learned in class. Lab handouts will be posted in D2L. Lab assignments will be explained at the beginning of each lab period and will be due at the end of the week. Lab assignments are to be submitted to the Lab Dropbox in D2L. **Lab attendance is mandatory.** If you do not attend a lab, you will not be given a grade for that lab without a valid excuse.

**(SAMPLE) LAB SCHEDULE:**

Lab #	Sec 1	Sec 2	Sec 3	Sec 4	Sec 5
	Mon 11:30 - 12:30 Bld 315 / 112	Mon 12:30 - 1:30 Bld 315 / 112	Wed 10:30 - 11:30 Bld 315 / 113	Thur 11:30 - 12:30 Bld 315/113	Mon 9:30 - 10:30 Bld 315 / 112
1	12 Jan	12 Jan	14 Jan	15 Jan	12 Jan
2	19 Jan	19 Jan	21 Jan	22 Jan	19 Jan
3	2 Feb	2 Feb	4 Feb	5 Feb	2 Feb
4	16 Feb	16 Feb	11 Feb	12 Feb	16 Feb
5	2 Mar	2 Mar	4 Mar	5 Mar	2 Mar
6	9 Mar	9 Mar	11 Mar	12 Mar	9 Mar
7	23 Mar	23 Mar	25 Mar	26 Mar	23 Mar

**EVALUATION:**

**(SAMPLE)**

Labs and Assignments\* ..... 10%  
 (4) Tests ..... 60% (each test is worth 15%)  
 Final Exam..... 30%

\* Lab attendance is required. You must complete the assignment for each lab in order to receive full marks.

GRADING SCALE		
90 - 100% .....A+	72 - 75% ..... B	55 - 59% .....C-
85 - 89% .....A	68 - 71% ..... B-	50 - 54% .....D
80 - 84% .....A-	64 - 67% ..... C+	0 - 49% .....F
76 - 79% .....B+	60 - 63% ..... C	

SOME IMPORTANT DATES
1. midterm tests 2. (Family Day) is a holiday... <b>VIU is closed.</b> 3. Study Days ( <b>No Classes</b> ) 4. Last day for course withdrawal 5. (Good Friday) and (Easter Monday) are holidays.... <b>VIU is closed.</b> 6. Last day of classes 7. Exams Period ( <b>Do not book holidays during this period</b> )

**There will be no make-up tests;** if you have a medical reason for missing a test, you must provide me with a written request to be excused, and this must include a note from a physician. In most cases, your score on the final exam will be used in place of the missed work.

**GRADE REVIEW:** If you have a *question or concern about an assigned mark*, please bring it to my attention within 3 school days from the day the test is returned to the class. I will always answer your questions but after 3 school days, I won't change your mark.

**FINAL GRADE:** Once final grades have been entered, **there is no possibility** of end-of-term extra credit assignments or supplemental exams to improve final grades. If you can put in any extra work, do it during the term. Utilize my office hours and or the Math Learning (Help) Centre.

**MATH HELP CENTRE** (Building 360 – Room 303): This is a friendly place offering expert tutorials to VIU students taking Math courses. If you are in the dark about any of your math courses, the Centre can help you see the light! Our teaching assistants can provide help for all level 100 Math courses.

**HOMEWORK:** Homework will be assigned at the end of almost every class but will not be collected for marking. It is however important that you do all homework assignments; they will help you to understand the subsequent lectures and also prepare you for the labs and tests. The course is cumulative (we build on the ideas we learn from day one). If you do not understand a concept, come and talk to me right away or go to the Math Learning Center for help.

It is very important that you keep up with the material presented in class. Copying lecture notes is not a substitute for receiving the lectures in class, but it helps if you must be absent from class. If you miss a class, it is your responsibility to find out what material you missed and do your best to learn it. **I encourage you to utilize my office hours and or the Math Learning Centre.** Every new lecture builds on the previous ones. It is very important to understand the material already received in preparation for the new lecture. Reading your class notes is not enough. Working outside of the classroom (on your own or on in small groups) is the key to success. **Cramming will not work for this course.**

**DOCUMENTED DISABILITIES:** Students with documented disabilities who require academic and or exam accommodations must contact Disability Services at the beginning of the term to arrange accommodation (**Website:** <http://www.viu.ca/disabilityservices/home/contactus.asp>). Students are responsible for providing me with copies of the documentation about the type of accommodation required. Failure to apply for the needed accommodation will likely result in **no accommodation**.

**OTHERS:** The [General Regulations](http://www.viu.ca/calendar/GeneralInformation/genregTOC.asp) website <http://www.viu.ca/calendar/GeneralInformation/genregTOC.asp> contains valuable information.

Information on [Policies and Procedures](http://www.viu.ca/policies) can be found at <http://www.viu.ca/policies>

**Academic Dishonesty -** See <http://www.viu.ca/policies/documents/96.01-Mar21-11.pdf>