

**University of Guelph**  
**Department of Mathematics and Statistics**  
**College of Physical and Engineering Science**  
**STAT\*2090: Introductory Applied Statistics II (0.5 credit)**

**Winter 2019 Course Outline**

**Instructor:** Gerarda Darlington  
MacNaughton Bldg (MACN) Room 514  
Extension: 53292  
email: [gdarling@uoguelph.ca](mailto:gdarling@uoguelph.ca)

**Office/Computer Lab hours (beginning the week of January 14):**

Tuesdays, 10:30am to 12:20pm in SSC 1303;  
Wednesdays, 3:00pm to 4:00pm in MACN 514;  
Thursdays, 10:30am to 12:20pm in SSC 1303.

**Lectures:** Monday, Wednesday, and Friday at 4:30pm to 5:20pm in THRN 1200

**Course description:** The topics covered in this course include: analysis of qualitative data; analysis of variance for designed experiments; multiple regression; exposure to non-parametric methods; power and sample size calculations; special topics such as logistic regression. Examples come from a variety of disciplines, including nutrition, family studies, education, marketing, medicine, psychology and sociology.

**Prerequisites:** STAT\*2080

**Exclusions:** BIOL\*2250, STAT\*2050, STAT\*2250

**Course materials:**

- \* 9<sup>th</sup> Edition of Introduction to the Practice of Statistics  
by Moore, McCabe and Craig
- \* STAT\*2090 lecture notes (provided on the Courselink site)

**Calculator:** Your calculator should be able to calculate at least one-variable statistics. If you're not sure about your calculator, please just ask me.

**Course Objectives:** This course consolidates the concepts of data analysis, statistical reasoning and statistical inference that were learned in STAT\*2080. It extends these concepts to more complex experimental and sampling designs.

We will work through most of the remainder of the textbook, *Introduction to the Practice of Statistics, 9<sup>th</sup> Edition*. As you have seen, the textbook emphasizes the use of statistics to help resolve important problems. The answers for the odd-numbered exercises in the text are given at the end of the book. Do as many of these as you feel you need in order to understand the concepts

and techniques covered in the course. Solutions for assigned questions will be posted on the Courselink site immediately after the due date.

By the end of the course you should:

- be able to apply the appropriate statistical method for data provided;
- be able to interpret results of statistical analyses;
- be able to develop and make inferences regarding statistical models;
- be able to critically evaluate statistical methods and results reported in the literature;
- understand and use experimental design principles;
- be able to use and understand output from SPSS for basic statistical analyses.

### **Marking Scheme and Test Dates:**

Assignments	21%	8 assignments (due Fridays at 8:00am)
Test 1	13%	Wednesday January 30; in class (45 minute test)
Test 2	13%	Wednesday February 27; in class (45 minute test)
Test 3	13%	Wednesday March 27; in class (45 minute test)
Final Exam	40%	Tuesday April 9, 11:30am to 1:30pm (Room TBA)

**NOTE:** You should have **NO** conflicts concerning these dates and times. If you do it is your responsibility to resolve them as soon as possible.

**IMPORTANT:** Assignment marks will **NOT** count toward your final grade if you fail all 3 tests and the final exam.

**POLICY for missed tests:** If you miss a test during the semester for a **documented** valid reason (e.g., medical illness) your final exam will be reweighted to make up for the missed test.

If you miss the final exam for any reason, you must see your program counsellor. University regulations require specific procedures to be followed regarding the conduct of final exams, including recourse, if any, for missed final examinations. These procedures are out of my control.

**Test and Exam calculator:** You must have a stand-alone calculator for all tests and the final exam. You will **not** be permitted to use a calculator on a laptop computer, iPhone, etc. If you are discovered to be using anything but a stand-alone calculator during a test or the final exam, it will be reported as possible academic misconduct.

**Assignments:** The assignments support and supplement the lectures. Working through examples and assigned problems is the key to success in the course. You are responsible for doing your own work. It is definitely beneficial to work with others but getting another student to do an assignment for you is academic misconduct.

We will be using the Courselink site for assignment distribution and for assignment answer submission. You can get access by going to <http://courselink.uoguelph.ca/> and then you log in using your university account login and password (the one you use for GryphMail). Assignments will be made available to you via pdf files on the STAT\*2090 Courselink site. You will be required to submit assignment responses via the appropriate assignment “quiz” on the Courselink

site by a specified due date and time. You will be able to have unlimited attempts when entering your answers until the time that the assignment is due. Your final attempt is the one that will be graded and will count toward your final assignment grade. Remember to save your answers right after you enter them and then finally submit the quiz at some time prior to the time that the assignment is due. There will be plenty of time to do the assignments and to submit your answers so the only legitimate reason for a late assignment would be a campus-wide failure of the Courselink system that I will definitely be aware of and that I will take into account since it will affect the entire STAT\*2090 class. The bottom line is that **if you don't fill in, save, and submit your assignment answers before the due date and time, you will receive a mark of zero for that assignment.**

To account for some reasonable excuse for non-submission of or poor performance on an assignment, I will **discard your worst assignment mark** when computing your final assignment grade. All assignment marks are of equal weight when I compute your final assignment grade.

**STAT\*2090 Teaching Assistants:**

Crystal Chen

Jeffrey Daniel

Guyan Yang

The [Mathematics and Statistics Learning Centre](#) in McLaughlin Library on the 3<sup>rd</sup> floor is staffed by teaching assistants. It is another place, other than my and STAT\*2090 teaching assistant office hours, where you can get help on the material in the course.

**Recording of Materials:**

Presentations that are made in relation to course work – including lectures – cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or a guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

**E-mail Communication:** As per university regulations, all students are required to check their University of Guelph GryphMail account <uoguelph.ca> regularly: e-mail is the official route of communication between the University and its students.

**When You Cannot Meet a Course Requirement:** When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The regulations and procedures for [Academic Consideration](#) are detailed in the Undergraduate Calendar.

**Drop Date:** The last date to drop one-semester Winter 2019 courses, without academic penalty, is Friday March 8. The regulations and procedures for [Dropping Courses](#) are available in the Undergraduate Calendar.

**Copies of Assignments:** Keep paper and/or other reliable back-up copies of all assignments: you may be asked to resubmit work at any time.

**Accessibility:** The University of Guelph committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact [Student Accessibility Services](#) at 519-824-4120 ext. 56208 or email [accessibility@uoguelph.ca](mailto:accessibility@uoguelph.ca)

**Academic Misconduct:** The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The [Academic Misconduct Policy](#) is detailed in the Undergraduate Calendar

**Resources:** The [Academic Calendars](#) are the sources of information about the University of Guelph's procedures, policies and regulations that apply to undergraduate, graduate and diploma programs.

**Tentative Course Schedule:**

<b>Week</b>	<b>Topics</b>
Jan 7 – 11	Review of Inference for the Mean of a Population, Sample Size Calculation, and Sign Test for Matched Pairs; Comparing Two Means
Jan 14 – 18	Comparing Two Means; Power and Inference as a Decision; <b>Assignment 1 due Friday January 18 at 8:00am</b>
Jan 21 – 25	Inference for a Single Proportion; Comparing Two Proportions; Data Analysis for Two-Way Tables; <b>Assignment 2 due Friday January 25 at 8:00am</b>
Jan 28 – Feb 1	Inference for Two-Way Tables; Goodness of Fit; <b>Test 1 on Wednesday January 30 in class</b>
Feb 4 – 8	Review of Scatterplots, Correlation, Least-Squares Regression; Simple Linear Regression; <b>Assignment 3 due Friday February 8 at 8:00am</b>
Feb 11 – 15	More Detail about Simple Linear Regression; Inference for Multiple Regression; <b>Assignment 4 due Friday February 15 at 8:00am</b>
Feb 18 – 22	Winter Break – no lectures/office hours
Feb 25 – Mar 1	Inference for One-Way Analysis of Variance; <b>Test 2 on Wednesday February 27 in class</b>
Mar 4 – 8	Inference for One-Way Analysis of Variance; Comparing the Means; <b>Assignment 5 due Friday March 8 at 8:00am</b> <b>40<sup>th</sup> Class Day is Friday March 8</b>
Mar 11 – 15	Randomized Complete Block Designs; The Two-Way ANOVA Model; <b>Assignment 6 due Friday March 15 at 8:00am</b>
Mar 18 – 22	Inference for Two-Way ANOVA; <b>Assignment 7 due Friday March 22 at 8:00am</b>
Mar 25 – 29	The Logistic Regression Model; <b>Test 3 on Wednesday March 27 in class</b>
Apr 1 – 5	Inference for Logistic Regression <b>Assignment 8 due Friday April 5 at 8:00am</b> <b>Classes conclude on Friday April 5</b>

**\* NOTE: The STAT\*2090 W19 Final Examination is on Tuesday April 9; 11:30am to 1:30pm (Room TBA).**