



## Applied Statistics and Data Analysis for Engineers 2015/2016

[Statistical Science 2143B Section 001](#)

### Course Outline

#### Instructor Information

<b>Instructor</b>	<a href="#">Serge Provost</a>
<b>Office</b>	WSC 280
<b>Email</b>	provost@stats.uwo.ca
<b>Phone</b>	519-661-3624 ext 83624
<b>Office Hours</b>	TBA

#### Course Information

<b>Course Description</b>	A data-driven introduction to statistics intended primarily for students in Chemical and Mechanical Engineering. Exploratory data analysis, probability, the Binomial, Poisson, Normal, Chi-Square and F distributions. Estimation, correlation and regression (model building and parameter estimation), analysis of variance, design of experiments. Cannot be taken for credit in any module in Statistics, Actuarial Science, or Financial Modelling.
<b>Prerequisites</b>	A full mathematics course, or equivalent, numbered 1000 or above. Statistical Sciences 1024A/B can be used to meet 0.5 of the 1.0 mathematics course requirement.
<b>Antirequisites</b>	All other courses or half courses in Introductory Statistics except Statistical Sciences 1023A/B, Statistical Sciences 2037A/B and Statistical Sciences 1024A/B.
<b>Pre,Co-requisites</b>	Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. You can be deregistered at any time even after writing the final exam. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites
<b>Warning</b>	
<b>Lecture Hours</b>	Mon,Wed,Fri 13:30-14:30 NS 1;
<b>Tutorial Hours</b>	Thu 11:30-12:30 AHB 1R40

#### Book Information

##### Text Book(s)

A Brief Course in Mathematical Statistics,

Elliot Tanis and Robert Hogg,

Pearson/Prentice Hall (2008)

##### Library Reserved Books

A copy of the textbook is available at the Taylor library's desk (on one-day loan).



## Course Objectives

I am aiming to cover the following textbook sections and associated topics: §1.1 [Basic probabilistic concepts], §1.3 through §1.5 [Conditional probability; Independent events; Bayes' theorem], §2.1, 2.2, 2.3 (only the binomial and Poisson distributions), §2.5 [Discrete distributions and related results], §3.1, 3.2, 3.3, 3.4, 3.6, 3.7 [Descriptive statistics; Continuous distributions including the normal distribution and related results] and §4.1 through §4.7 plus §4.10 [Confidence intervals and tests of hypotheses; Linear regression; Analysis of variance; Chi-square tests (if time permits)].

## Assessment

### Assignments and/or Quizzes

Practice problems (not to be handed in) will be assigned and the solutions, provided shortly thereafter on the course website and/or during the tutorial sessions. The tutorials will take place at 11:30 in AHB Room 1R40 every Thursday except those following the tests, that is, Jan. 21, Feb. 11 and March 10. The starting date will be announced in class.

### Midterms or Tests

Three tests (each of an approximate duration of 50 minutes) will be administered in class (NS 1) on the following Wednesdays: Jan. 20, February 10 and March 9. Only the two highest marks will contribute to one's final grade. As per departmental policy, there will be no make-up exams for missed tests. Supporting documentation will be required, should one have to miss more than one test.

### Final Exam

The three-hour final exam will count for 60% of the course mark (80% if one were to have missed two of the tests; 100% if, somehow, one missed all three). This examination will be cumulative with an emphasis on the latter part of the course.

### Evaluation

Tests: 40% (best 2 out of 3)

Final exam: 60%

## Course Website Information

<http://www.stats.uwo.ca/courses/SS2143>

It would be advisable to refer to this website regularly for announcements, supplementary material to be downloaded, lists of topics to be omitted from some of the specified textbook sections, suggested problems and solutions, material for which you will be responsible for each of the tests, etc.

## Computing and/or Calculator Requirement

You will need a non-programmable pocket calculator for the tests and the final examination.

## Department Policy on Missed Course Requirements and Student Health and Wellness

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your Dean's office as soon as possible, and contact your instructor immediately. If accommodation is approved by your Dean's office, your instructor will be notified, then it is your responsibility to make alternative arrangements with your instructor. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information please see: [http://www.stats.uwo.ca/accommodation\\_medical.pdf](http://www.stats.uwo.ca/accommodation_medical.pdf). A student requiring academic accommodation



due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility. The form can be found at: <http://www.stats.uwo.ca/medicalform.pdf>. Or, request a Record's Release Form (located in the Dean's Office) for visits to Student Health Services.

**Missed Midterm or Test:** The policy of the department of Statistical and Actuarial Sciences is that there will be no make-up exams for a missed midterm. For those that do legitimately miss a midterm and provide the required supporting documentation, the standard practice will be that the weight of the midterm will be reassigned to the final exam. If your reason is not deemed valid, then you will receive a mark of 0.

**Student Health and Wellness:** As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at [http://www.health.uwo.ca/mental\\_health/resources.html](http://www.health.uwo.ca/mental_health/resources.html).

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: [http://www.health.uwo.ca/mental\\_health/module.html](http://www.health.uwo.ca/mental_health/module.html). This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

**Accessibility:** Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

**Support Services:** Learning-skills counsellors at the Student Development Centre (SDC) (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

## **Email Communication**

You are welcome to communicate with your instructor by email, but email communication should only be used to provide them with information or to ask a question that requires a brief response. For more lengthy discussions and for discussions on lectures/course material please see your instructor during their scheduled office hours or by appointment. If you do email them, please use your UWO account, as these are often the only emails read (as emails sent from other addresses often get spammed).



## **Attendance**

**Attendance:** Classroom attendance is viewed as an important part of the learning process. Students are advised that excessive absenteeism may result in the student being disbarred from the final exam (see Western Academic Calendar). **Class Environment Policy:** The Department has adopted a "Mutual Expectations" policy governing the classroom environment and all work submitted by students. The full text of the policy can be found at: [http://www.stats.uwo.ca/mutual\\_expectations.pdf](http://www.stats.uwo.ca/mutual_expectations.pdf). In summary, the policy was developed under the premise that all interactions between students and faculty should be governed by the principles of courtesy, respect and honesty. Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help. **Academic Integrity:** We expect our students to conduct themselves academically in a manner that upholds the integrity and reputation of our academic programs. Cheating on assignments, exams, essays and term papers is considered to be a serious violation of ethical conduct, and will not be tolerated.

## **Classroom Environment**

**Registrarial Services:** <http://http://www.registrar.uwo.ca/> **Learning-skills services at the SDC:** <http://http://www.sdc.uwo.ca/> **Universities Students' Council:** <http://westernusc.ca/>