

Statistics 3657a

September 2014

1. **Instructor:** R. J. Kulperger

- WSC 231, e-mail: kulperger@uwo.ca , phone 519-661-3627 or X 83627 on campus

2. **Text and Course Description:** J. A. Rice, Mathematical Statistics and Data Analysis, third edition. The course will cover Chapters 1–6, plus some additional topics discussed in the lectures. Chapters 1 and 2 are review and only selected material from these chapters is discussed in class. The student will be responsible for *all the material* in these chapters, unless otherwise noted in class. All additional topics covered in the lectures are also possible topics for tests and exams.

3. **Prerequisites** The student is responsible for ensuring they meet the course prerequisites. The department course counsellors can verify these if needed.

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

4. **Course schedule:** MWF 11:30 AM – 12:30 PM, Room WSC 55 . The Fall semester lectures begin on September 4, 2014 and the Fall semester lectures end on December 3, 2014.

Tutorials Wednesday 5:30-6:30 PM Room WSC 55

The tutorials will start in the second week of the semester.

5. **Midterm exam:** There are two term tests, both during the tutorial time.

The dates for the two tests are given below.

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, one question from their final exam will be replaced by a question covering the material related to the missed term test. If your reason is not deemed valid, then you will receive a mark of 0.

At the final exam the student should identify themselves so they will be given the appropriate exam.

Term test 1, Wednesday October 8, 2014	WSC 55
Term test 2, Wednesday November 12, 2014	WSC 55

There are **no makeup exams** for these.

- 6. **Final exam:** to be announced and scheduled by the Registrar’s Office. Students missing a midterm, and with a valid reason as approved by the Faculty of Science counselors, will write a slightly different exam, as described above, with a question to cover material missed on their midterm.
- 7. **Web page:** See the official course outline on the course links page from our department undergraduate course list web page

http://www.stats.uwo.ca/modules/undergraduate/section_list.php

This link will have a further link to the course web page that I will maintain at

<http://www.stats.uwo.ca/faculty/kulperger/Stat3657/Stat3657.htm>

This web site is password protected. The username and password will be announced in class. Assignments and general announcements will be posted there.

- 8. **Office Hours:** To be announced. The TA will also have 1 additional office hour per week, and this time will be announced when available.

9. **Course Grading:**

The student will be graded as the maximum of GR1 and GR2. For grading scheme GR2 about half the marks (8 of the 15 for the term test) from the lower grade midterm will be shifted to the final exam. This will allow a student who does not perform well on a midterm (*) to have an opportunity to recover with additional weight on the final exam.

	GR1	GR2
Assignments	10%	10%
Midterm (*)	30%	22%
Final Exam	60%	68%

- 10. See the course web for the document **Policies and Comments** concerning assignments and other courses related material.
- 11. **Department Policy about email** 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).

Course Description: The course is an intermediate probability (advanced introduction to the basic concepts of probability), properties of random variables, conditional expectation and transformations. This topics are needed for the development of statistical theory and actuarial topics such as risk theory and loss functions. The course will make use of the prerequisites of first and second year calculus, basic algebra and linear algebra and the prerequisite statistics courses. The student is expected to review these topics as needed. Basic properties of functions will be used, such as : monotone, 1 to 1 mappings, many to 1 mappings. invertible, noninvertible. Curve sketching from first year calculus will be used. The change of variables theorem for integrals will be used; recall Jacobians. The student should be familiar with not just the conclusion, but also the conditions or hypotheses of these tools. Computer work, mainly using **R**, will be used in the lectures and assignments from time to time to illustrate and implement some of the topics. However MatLab or other software may be used if needed, but the student should speak to me about this.

Course Objective: The objective of the course is for the student to master the tools and methods finding the distributions of functions of random variables (r.v.'s), understand joint distributions and related topics, some basic limit theorems or approximations in probability and statistics (Law of Large Numbers and the Central Limit Theorem). The course will introduce conditional expectation. The tools and techniques used are as important as the results, as these tools are basic to other third and fourth years honours statistics and actuarial courses. The emphasis of the course is on the methodology. Exams will be graded accordingly, with the majority of marks for methods and a smaller amount for the answer.

The course web page will contain some additional comments on doing homework and some alternative texts.