

STAT4530, CRN 14187 DESIGN OF EXPERIMENTS 1 Fall Term, 2014

Instructor: Dr. Po Yang
Email: Po.Yang@umanitoba.ca
Office: 346 Machray Hall
Phone: (204)480-1821

Lecture hours and location: Tuesdays and Thursdays 10:00am-11:15am, 316 Machray Hall.

Office hours: Tuesdays and Thursdays 1:00pm-2:30pm, or by appointment.

Course web: All course materials are posted on the University of Manitoba Desire2Learn.

Calendar description: (Formerly 005.453) Objectives in designing experiments; designs commonly used in research including analysis and an introduction to the construction of designs.

Prerequisites: STAT 3800 or the former STAT3600 (005.360)(C); and STAT3480 (005.348)(C); or consent of department.

Textbook: *Design and Analysis of Experiments* (8th edition), Douglas C. Montgomery, John Wiley and Sons. ISBN: 978-1118-14692-7.

Assignments and Tests: There will be three assignments, two term tests, and final exam. The assignments will be collected and graded. The dates of the term tests and final exam are to be determined. The marks breakdown is as follows:

Three Assignments	20%
Term Test 1	15%
Term Test 2	15%
Final Examination	50%

Computer softwares: Instructions or code will be given if a software is used.

Course contents: The course will provide an introduction to the most important experimental designs and analysis strategies. The course topics will be selected from Chapters 1, 3-8, and 13 of our textbook. Selected topics from Chapter 9 and Chapter 14 will also be discussed if time permits.

1. Principles of experimentation. (Chapter 1)
2. Singly factor experiments: ANOVA, model adequacy checking, comparisons among treatment means, fixed and random effects models, and expected mean squares. (Chapter 3)
3. Completely randomized design, randomized complete block design, and Latin square design. (Chapter 3 and Chapter 4)
4. Factorial experiments: Introduction, two-factor factorial design and its analysis, two-level factorial design, main effects, interactions, and tests of factorial effects. (Chapter 5 and Chapter 6)

5. Fixed, random and mixed effects models for factorial designs, rules for determining expected mean squares. (Chapter 13)
6. Blocking and Confounding in two-level factorial design. (Chapter 7)
7. Two-level fractional factorial design: generators, defining relation, alias structure, and resolution. (Chapter 8)
8. Three-level factorial design, three-level design in 3^p blocks, fractional factorial 3^{k-p} design, nested and split-plot designs. (Chapter 9 and Chapter 14, if time permits)

Academic Integrity Policy:

PLEASE REFER TO THE UNIVERSITY OF MANITOBA GENERAL ACADEMIC REGULATIONS (AVAILABLE ONLINE VIA U OF M HOMEPAGE) REGARDING ACADEMIC INTEGRITY, EXAMINATION POLICIES, ETC.

SECTION 5: Academic Evaluation

5.2.9 Examinations: Personations

“A student who arranges for another individual to undertake or write any nature of examination for and on his/her behalf, as well as the individual who undertakes or writes the examination, will be subject to discipline under the universitys Student Discipline Bylaw, which could lead to suspension or expulsion from the university. In addition, the Canadian Criminal Code treats the personation of a candidate at a competitive or qualifying examination held at a university as an offence punishable by summary conviction. Section 362 of the code provides:

Personation at Examination

362. Everyone who falsely, with intent to gain advantage for him/herself or some other person, personates a candidate at a competitive or qualifying examination held under the authority of law or in connection with a university, college or school or who knowingly avails him/herself of the results of such personation is guilty of an offence punishable on summary conviction. 1953- 54,c.51, s.347.

Both the personator and the individual who avails him/herself of the personation could be found guilty. Summary conviction could result in a fine being levied or up to two years of imprisonment.”

SECTION 8: Academic Integrity

8.1 Plagiarism and Cheating

“Plagiarism or any other form of cheating in examinations, term tests or academic work is subject to serious academic penalty (e.g. suspension or expulsion from the faculty or university). Cheating in examinations or tests may take the form of copying from another student or bringing unauthorized materials into the exam room (e.g., crib notes, pagers or cell phones). Exam cheating can also include exam impersonation. (Please see Section 5.2.9 on Exam Personation). A student found guilty of contributing to cheating in examinations or term assignments is also subject to serious academic penalty.

To plagiarize is to take ideas or words of another person and pass them off as ones own. In short, it is stealing something intangible rather than an object. Plagiarism applies to any written work, in traditional

or electronic format, as well as orally or verbally presented work. Obviously it is not necessary to state the source of well known or easily verifiable facts, but students are expected to appropriately acknowledge the sources of ideas and expressions they use in their written work, whether quoted directly or paraphrased. This applies to diagrams, statistical tables and the like, as well as to written material, and materials or information from Internet sources.

To provide adequate and correct documentation is not only an indication of academic honesty but is also a courtesy which enables the reader to consult these sources with ease. Failure to provide appropriate citations constitutes plagiarism. It will also be considered plagiarism and/or cheating if a student submits a term paper written in whole or in part by someone other than him/herself, or copies the answer or answers of another student in any test, examination, or take-home assignment.

Working with other students on assignments, laboratory work, take-home tests, or on-line tests, when this is not permitted by the instructor, can constitute Inappropriate Collaboration and may be subject to penalty under the Student Discipline By-Law. An assignment which is prepared and submitted for one course should not be used for a different course. This is called duplicate submission and represents a form of cheating because course requirements are expected to be fulfilled through original work for each course.

When in doubt about any practice, ask your professor or instructor. The Student Advocacy Office, 519 University Centre, 474-7423, is a resource available to students dealing with Academic Integrity matters.”