

STA437H1-F/ STA2005H-F LEC0101

Methods of Multivariate Data/Applied Multivariate Statistics

Course Outline - Fall 2018

Class Location & Time: Wed, 02:00 PM - 05:00 PM NF 003

Instructor: Dehan Kong

Office Location: Sidney Smith Hall 6027G

Office Hours: Wed, 10 AM - 12 PM

Telephone: 6472278706

E-mail Address: dehan.kong@utoronto.ca

Course Web Site: Quercus

Teaching Assistants: Yang Guan Jian Guo and Xinyi Zhang

Office Hours: Thu, 1 PM - 3 PM, Mon, 10 AM – 11 AM

Office Location: SS 623B in the Sidney Smith Basement in level 'G'

E-mail Address:

ygi.guo@mail.utoronto.ca, xyi.zhang@mail.utoronto.ca .

Course Description

This course covers some important and useful techniques for the analysis of multivariate data: multivariate normal distribution theory, basic estimation and hypothesis testing for multivariate means and variances, multivariate analysis of variance, repeated measurements, classification and linear discriminant analysis, principal components, canonical correlation and factor analysis.

Prerequisites

STA302H1. Strongly recommended preparation: **MAT223H1/MAT240H1.**

Assumed background is **linear algebra**, calculus, basic probability theory (including normal, Student's t, Chi-square, and F distributions), and mathematical statistics (including point estimation, maximum likelihood, confidence intervals, hypothesis tests, linear regression, and one-way analysis of variance).

Text and Resources

Required Textbook: Applied Multivariate Statistical Analysis, **6th Edition**, by R. A. Johnson and D. W. Wichern (Prentice Hall)

Recommended Textbook: The Elements of Statistical Learning - Data Mining, Inference and Prediction, by Trevor Hastie, Robert Tibshirani, and Jerome Friedman, 2nd edition, Springer
There will be a computing component in this course, and the statistical software R will be used throughout the course. You are also allowed to use other software if it has the same capabilities. However, please be advised that the TA and I may not be familiar with your software of choice resulting in limited assistance.

Quercus: Please access the Quercus for all course and grade information. Course materials provided on Quercus are for the use of students currently enrolled in this course only. Providing course materials to anyone outside of the course is unauthorized use.

Test and Exam

Tests and final exam will be **CLOSED BOOK**, and **NO aid sheet** is permitted, while I will provide some basic formulas/facts on the test/exam paper depending on the problems. You can only bring a **NON-PPROGRAMMABLE calculator** for the test/exam.

Grade Breakdown

Item	% of grade	Comments
Term test 1	25%	Tentative time: Oct 3rd (Wed), 2 or 3 hours during class time.
Term test 2	25%	Tentative time: Oct 31st (Wed), 2 or 3 hours during class time.
Final exam	50%	TBA

Course Policies

Missed test: There are **no make-up test**. Should you miss the test due to illness, you are required to submit to your instructor, within one week, completed by your doctor, **the "U of T Student Medical Certificate"**. The quiz/test weight will be shifted to the final exam and/or another test. **If this documentation is not received, your test mark will be zero.**

Missed final: Follow the Faculty of Arts and Science policy & procedures to proceed.

Term Test grading disputes: must be submitted in writing **within one week after work is returned**. **Disputes will not be considered, should you have used pencil on the test.**

For grade disputes, you need to write at the back of the last page why you think you deserve more points. Grade dispute will not be successful unless you get the whole sub question correct, but you are deducted points in the sub question. **Any disputes on how many partial points you get will not be successful if you do not get the whole sub question correct.**

For grading dispute, **if your dispute is not successful, two points will be deducted from your score** because this shows that you do not understand the materials even after you know the answer. In addition, the TA and/or I will check the scores of every question in the test.

It is highly likely that your marks will become even lower, so dispute at your own risk!!!

There are quite a lot of cases that the students got a lower score after grading disputes. For disputes on final exam, you need to follow the Faculty of Arts and Science policy & procedures to proceed.

Email: Due to the huge size of the class, I am not able to reply emails from all of the students. I will not reply any emails regarding the materials covered in the course (including any information about term tests or final exam). If you have any questions about the course materials, come to my office hour or TA's office hours. I will also not reply any emails regarding to your test and exam scores. If you have any concerns about your scores, follow the rule of grade disputes.

Academic Integrity

Any form of academic dishonesty will be given the most severe penalty possible. Cheating includes representing the ideas of anybody except yourself as your own ideas. The minimum penalty I am required to enforce by policy is a zero for tests or examination. The following link contains information for students about how to act with academic integrity, the Code of Behaviour on Academic Matters, and the processes by which allegations of academic misconduct are resolved: www.artsci.utoronto.ca/osai/students