

STA437H1-S/ STA2005H-S LEC0101

Methods of Multivariate Data/Applied Multivariate Statistics

Course Outline - Winter 2017

Class Location & Time: Wed, 01:00 PM - 02:00 PM MB 128

Fri, 01:00 PM - 03:00 PM HS 610

Instructor: Dehan Kong

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Office Hours: Wed, 10:00AM-12:00PM

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Course Web Site: <https://portal.utoronto.ca>

Teaching Assistants: Arvind Vijay Shrivats, Tianle Chen, Ali Ai- Aradi

Office Hours: Thursday 10:00-11:00AM, Tuesday 12:00-1:00PM, Monday 10:00-11:00AM

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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. 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.

Blackboard: Please access the Blackboard for all course and grade information.

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: Feb 3rd (Fri), 2 hours during class time.
Term test 2	25%	Tentative time: March 10th (Fri), 2 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. **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.

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 quiz/test.** For disputes on final exam, you need to follow the Faculty of Arts and Science policy & procedures to proceed.

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