

STAT 465 (MAST 679/881), Sec. K
Multivariate Statistics
Fall 2021

- Instructor:** Dr. D. Sen, Office: LB 921-3 (SGW), Phone: (514) 848-2424, Ext. 3241
Email: debaraj.sen@concordia.ca
- Office Hours:** Wednesdays, 10:30-12:00.
- Textbook:** *Applied Multivariate Statistical Analysis*, 6th Edition, by R. A. Johnson and D. W. Wichern, Pearson Prentice Hall (2007).
Note: Students should order textbooks as early as possible, especially for print versions in case books are backordered or there are any shipping delays.
- Other Reference:** *Linear Statistical Inference and Its Applications*, 2nd Edition, by C. R. Rao, Wiley (1973).
- Calculators:** Only calculators approved by the Department such as **Sharp EL 531** or the **Casio FX 300MS** are permitted for the class test and final examination. See <http://www.concordia.ca/artsci/math-stats/services.html#calculators> for details.
- Assignments:** Assignments are compulsory. There will be 4 or 5 assignments. **Late assignments will not be accepted.**
- Midterm Test:** There will be one midterm test, based on the material of Weeks 1-7, which will contribute up to 30% to your final grade (see the Grading Scheme below). Missed tests cannot be made up. The midterm test will be held on **Wednesday, October 27, 2021**. This exam and the final will be closed book exams.
- NOTE:** It is the Department's policy that tests missed for any reason, **including illness**, cannot be made up. If you miss the midterm test because of illness (*medical note required*) the final exam will count for 85% of your final grade, and the assignments will count for the remaining 15%.

Final Exam: This exam will be held three hours long and cover all the material in the course.

NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Conflicts or problems with the scheduling of the final exam must be reported directly to **the Examinations Office, not to your instructor**. It is the Department's policy and the Examination Office's policy that students must be available to take the final exam on the selected date and time. Conflicts due to travel plans will not be accommodated.

Final Grade:

- a) Assignments (15%)
- b) Midterm test (30%)
- c) Final examination (55%)

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

IMPORTANT: **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE.**

Week	Topics to be Covered	Sections
1	Matrix Algebra & Random Vectors	2.2-2.7
2	Vectors & Matrices, Sample Geometry & Random Sampling	2A, 3.3-3.6
3	The Multivariate Normal Distribution	4.1-4.5
4	The Multivariate Normal Distribution	4.6-4.8
5	Inferences about a Mean Vector	5.1-5.4
6	Inferences about a Mean Vector	5.5-5.8
7	Comparisons of Several Multivariate Means	6.1-6.2 MID TERM TEST
8	Comparisons of Several Multivariate Means	6.3-6.6
9	Principal Components	8.2-8.4
10	Factor Analysis and Inference for structured covariance matrices	9.1-9.4
11	Canonical Correlation Analysis	10.2-10.6
12	Discrimination and Classification	11.1-11.5
13	Discrimination and Classification & Review	11.6-11.8

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [Undergraduate Calendar, Sec 17.10.2].

Behaviour

All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the [Code of Rights and Responsibilities](#) which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in University activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

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Extraordinary circumstances

In the event of extraordinary circumstances and pursuant to the [Academic Regulations](#) the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the changes.