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The University of Melbourne

School of Mathematics and Statistics

MAST90105 Methods of Mathematical Statistics

Information Sheet (*Semester 1, 2024*)
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Lecturer: Dr. Pavel Krupskiy, Room 188A, Peter Hall Building
Email: pavel.krupskiy@unimelb.edu.au

Time & Venue:

- *Lectures:*
  Lecture 1 MON 12:00 - 13:00 in Glyn Davis-B120 (Singapore Theatre)
  Lecture 2 TUE 16:15 - 17:15 in Redmond Barry-200 (Rivett Theatre)
  Lecture 3 WED 10:00 - 11:00 in Old Geology (North)-G04 (Theatre 1)
  Lecture 4 THU 13:00 - 14:00 in in Old Geology (North)-G04 (Theatre 1)

- *Labs:*
  P01/03 MON 13:00 - 14:00 Peter Hall-G70 (Wilson Lab); Pavel Krupskiy
  P01/01 TUE 11:00 - 12:00 Peter Hall-212 (Nanson Lab); Ninh Tran
  P01/02 TUE 15:15 - 16:15 Peter Hall-G70 (Wilson Lab); Haoze Hou
  P01/04 THU 11:00 - 12:00 Peter Hall-G69 (Thompson Lab); Youran Zhou

- *Workshops:*
  W01/01 FRI 10:00 - 11:00 Peter Hall-213; Ninh Tran
  W01/02 FRI 12:00 - 13:00 Peter Hall-213; Pavel Krupskiy
  W01/03 FRI 14:15 - 15:15 Peter Hall-213; Youran Zhou
  W01/04 FRI 16:15 - 17:15 Peter Hall-213; Haoze Hou

- *Office hours:* TBA

- *Tutor contact emails:*
  Ninh Tran: ninh.tran@unimelb.edu.au
  Haoze Hou: haoze.hou.1@unimelb.edu.au
  Youran Zhou: echo.zhou@unimelb.edu.au
  You can contact your tutor after class or by email if you have a quick question about the subject material.

Mode of delivery for this course

- *Lectures:* in-class delivery (check times and venues above)

  - Lectures will be recorded and made available on the Canvas LMS website through Lecture Capture

- *Labs and Workshops:* in-class delivery (check times and venues above). Please contact your tutor if you want labs or workshops live-streamed and/or recorded

Prerequisites:

- **Option 1:**

  – MAST10006 Calculus 2 or MAST10021 Calculus 2: Advanced **and one of**
  – MAST10007 Linear Algebra, MAST10022 Linear Algebra: Advanced, MAST10010 Data Analysis 1, MAST10011 Experimental Design and Data Analysis

- **Option 2:**

  – Entry into the Master of Data Science program or Graduate Diploma in Data Science.

Please contact the subject coordinator if you require a prerequisite waiver.
Assessment:

- Assignments: 20% for 4 assignments (5% each); posted on the LMS website

- Mid-semester exam: 35% (15 minutes reading time, 3 hours writing time, Apr 15-19)

- Computer test: 10% (10 minutes reading time, 50 minutes writing time, May 20-24)

- Final exam: 35% (15 minutes reading time, 3 hours writing time, Jun 3-21)

  – Both the mid-semester exam and final exam, and computer test will be carried out on campus

  – Students can take one A4 double-sided hand written sheets of notes and a non-programmable calculator to the mid-semester and final exams

  – The lab test will be conducted in a lab room (you can bring your laptop). The test is open book, but you cannot use Internet to access the lab materials posted on the LMS website and communicate with other students during the test

Textbook: Probability and Statistical Inference (9th Edition) by Hogg, R. V., Tanis, E. and Zimmerman, D.

- Most chapters are covered

- Numbers at the end of section titles in lecture notes are textbook chapters

- Lectures are not always in the same order as chapters in the textbook

Lecture schedule:

- **Probability part** (requires knowledge of differentiation and integration rules, 7 weeks):

  – basic definitions and concepts (sets, permutations, combinations)
  – discrete distributions and random variables
  – continuous distributions and random variables

- continuous distributions of two random variables, correlation
- transformations of random variables, limiting theorems

- **Inference part** (requires material covered in the probability part, 5 weeks):

    - data description and point estimation
    - confidence intervals
    - hypothesis testing
    - regression models, analysis of variance, contingency tables

Useful links:

- Subject website https://canvas.lms.unimelb.edu.au/courses/187101

- Subject timetable

- Timetable assistance form to adjust your timetable if you have clashes with other subjects, classes appear full, or if you need an online class. You can adjust your enrollment online up until the end of week 3. After this period you should still submit a timetable assistance form if you have a reason for needing to adjust your timetable.

- Other important information for students: https://students.unimelb.edu.au/