



Stat 7410 (Autumn 2017): Theory of Linear Models

Lecturer

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Office hours in 205B Cockins Hall: Tues 12-1pm, Thu 2-3pm, or by appointment.

Grader

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Lectures

Mon, Wed, and Fri, 1.50–2.45pm in [Baker Systems Engineering \(BSE\) 130](#)

Holidays: Mon 4 Sep, Fri 13 Oct, Fri 10 Nov, Wed 22 Nov, Fri 24 Nov.

Please download notes from the class website at <https://osu.instructure.com/courses/27305/>

Lectures may not be recorded.

Class Attendance Policy

You are expected to attend all lectures.

Course Description

This is a course on the **theory** of the linear model, the most commonly used statistical model. As well as providing the theory for the definition, estimation, and testing in this class of models, we consider statistical methods for multiple comparisons, and consider a breakdown in the model assumptions. More advanced topics in this course include the discussion of blocking, random and mixed effects, and an introduction to generalized linear models.

Prerequisites: Stat 6860 (Foundations of the Linear Model), as well as a solid course on linear algebra at the undergraduate level; Stat 6802 (Statistical Theory II), introducing the theory for statistical estimation. Stat 6910 and 6950 (Applied Statistics I and II) giving exposure to analysis of variance and experimental design, as well as regression modeling.

Textbook

N. Ravishanker and D.K. Dey (2001), *A First Course in Linear Model Theory*, Chapman and Hall.

I will highlight other useful references as the course progresses.

Computing

This class requires you to use the statistical software package called R.

More details will be given in class and on the class web site.

Evaluation

Homework	Midterm 1	Midterm 2	Final exam
15%	25%	25%	35%

Grades will be recorded on the class website.

Homework will be due at the **beginning** of class on the day it is due. **No** late homework will be accepted. You are encouraged to work together on the homework, but **do not** copy any part of a homework. Each student must produce his/her own homework to be handed in. Electronic submissions are **not** permitted. Feel free to ask me for help after you have made an attempt of the questions. The grader for the course does not have the time to provide detailed explanations on each question that is graded. To make up for this, I will endeavor to make homework solutions detailed enough to allow you to understand how the question could be approached.

Exams: There will be **two midterms** and **one final exam**:

Midterm 1	Wed 27 Sep	1.50–2.45pm
Midterm 2	Wed 1 Nov	1.50–2.45pm
Final	Wed 13 Dec	2.00–3.45pm

All exams are closed book/closed notes. A calculator is allowed – tablets, laptops, and cellphones are not. The first midterm covers the material up to and including Mon 25 Sep. The second midterm covers the material up to and including Mon 30 Oct. The final will cover all the material for the course. There will be **no make-up** exams.

Academic misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (<http://studentaffairs.osu.edu/csc/>).

Disability Statement

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.osu.edu/>.

Disclaimer

This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular I reserve the right to change due dates or the methods of assessment. Official announcements will ALWAYS be those made in class.