



Stat 3302 (Spring 2017): Statistical Modeling for Discovery II

Lecturer

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Office hours in 205B Cockins Hall: Tues 1-2pm, Wed 3-4pm, or by appointment.

TA

Kori Brady

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Mon 11.30-12.30pm, Wed 3-5pm, Fri 11.30-12.30pm in 122 Cockins Hall.

Lectures

Mon, Wed, Fri, 12.40–1.35pm in [Cockins Hall \(CH\) Room 232](#).

Holidays: Martin Luther King Jr. Day is Mon 16 Jan; Spring break is Mon 13–Fri 17 Mar.

Please download notes from the class website at <http://www.stat.osu.edu/~pfc/teaching/3302/>

Lectures may not be recorded.

Class Attendance Policy

You are expected to attend all lectures.

Course Description

This course continues to investigate statistical models for data analysis and discovery in big-data settings. The regression methods developed in Stat 3301 are extended to data settings with binary and multi-category outcomes. An introduction to some of the most commonly used statistical methods for exploring and analyzing multivariate data is provided. Interpretation and communication of the results of analyses is emphasized. Upon successful completion of the course, students will be able to

1. Build, fit and interpret statistical models for binary outcomes
2. Understand the difference between nominal and ordinal outcomes and build regression models that are appropriate for each
3. Recognize the types of questions that can be answered by regression models for multi-category data and structure models to answer those questions
4. Comprehend the statistical principles that underlie basic methods of multivariate data analysis

Prerequisites: Stat 3301 (Statistical Modeling for Discovery I); A knowledge of linear algebra.

Textbooks

A. J. Dobson and A. Barnett (2008), An Introduction to Generalized Linear Models, Third Edition, Chapman & Hall/CRC Texts in Statistical Science.

A. C. Rencher and W. F. Christensen (2012), Methods of Multivariate Analysis, Third Edition, Wiley. Available online at <http://onlinelibrary.wiley.com.proxy.lib.ohio-state.edu/book/10.1002/9781118391686>.

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

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|----------|-----------|-----------|---------|------------|
| Homework | Midterm 1 | Midterm 2 | Project | Final exam |
| 15% | 20% | 20% | 15% | 30% |

Grades will be recorded on [Carmen](#)

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.

Homework preparation rules: Put your name and the homework assignment number on the top right-hand corner of every page. All homework must be submitted on 8.5”x11” paper. Staple the pages together. We are not responsible for lost pages. Submit the problems in order, making sure that the computer output and discussion is placed together (do not put the computer output at the end of homework). Raw computer output is not acceptable. Make it clear what parts of the output are relevant and show how they answer the questions posed in the homework.

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

| | | |
|-----------|------------|---------------|
| Midterm 1 | Fri 17 Feb | in class |
| Midterm 2 | Fri 24 Mar | in class |
| Final | Tue 2 May | 12.00–1.45 pm |

All exams are closed book/closed notes. A basic calculator is allowed – tablets, laptops, and cellphones are not. Midterm 1 covers the material up to and including Wed 15 Feb. Midterm 2 covers the material up to and including Wed 22 Mar. The final will cover all the material for the course. There will be **no make-up** exams.

Project: In groups of 4, students will be responsible for completing a project. Proposals for project ideas will be due at the start of the last class before spring break (Fri 10 Mar) and the project will be due near the end of the semester. The project will consist of finding a dataset, formulating questions that can be answered with the data, and performing an appropriate analysis to answer the questions posed. Further details, including deadlines will be given as the semester progresses.

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.