

# Math 531 Regression I.

## Fall 2016

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- **Meeting time & location:** MWF 1:10 - 2:10pm at OW 100E.
- **Office hours:** MW 3:30-5:00pm or by appointment.

If you need to reach me, please e-mail [gang@math.binghamton.edu](mailto:gang@math.binghamton.edu).

**Please include [Math531] in the subject line of your email, or your email may not be read promptly.**

## Prerequisite

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Math 501 and Math 502, or equivalent. A course in linear algebra. **Graduate students from outside of the mathematical department and senior undergraduate students may take this course with Instructor's approval.**

## Learning Objectives

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1. Basic theories of linear regression models: estimation, statistical inference, prediction, model diagnosis, model selection, etc.
2. Proficient use of programming language R with applications to regression models.
3. Basic training in scientific writing.
4. Basic training in presentation.

This course is a 4-credit course, which means that students are expected to do at least 12.5 hours of course-related work or activity each week during the semester. This includes scheduled class lecture/discussion meeting times as well as time spent completing assigned readings, studying for tests and examinations, preparing written and computing assignments, and other course-related tasks.

## Recommended Texts

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The required texts is **Faraway (2014)** (see below for details).

### ▪ Required text

- Faraway (2014). Linear Models with R, Second Edition. (Chapman & Hall/CRC Texts in Statistical Science)
- Link to R scripts of the book: R codes
- **Recommended additional reading**
  - Sheather (2009). A Modern Approach to Regression with R. (Springer Texts in Statistics)

## Software

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1. **R is chosen to be the statistical software used in this course.** There are many online resources where the students can learn the basics of R.

1. An Introduction to R
2. R tutorial by Kelly Black
3. Here is a pointer to R blogs.
4. A comprehensive introduction to R

Please install R before the beginning of the semester. In addition to R, some may find RStudio to be handy. Downloads:

- R - mirror hosted at UC Berkeley.
- R Studio - a more user friendly platform for R.

**Note: This is not an R class. R will not even be taught in class. You are expect to learning R programming by yourself.**

2. **All homework must be completed using Latex, unless otherwise instructed.**

1. Download Texstudio
2. Download Miktex
3. A Simplified Introduction to Latex
4. LaTeX Tutorials: A Primer

## Grading

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- **Homework (20%):**
  1. Assigned every day. Don't skimp on the homework if you want a good grade.
  2. You may discuss the problems with each other in general terms, but you must write your own solution. (**If you were found copying or allowing others to copy your homework more than three times, you will automatically receive a F.**)
  3. All sources, including friends and colleagues, must be cited.
- **Midterm exam (25%):** October 24th (tentative, subject to change)
- **Final Exam (25%):** TBA.
- **Team project (30%):** [Guidelines](#)
- **If you final overall grade is less than 50%, you will automatically receive a F!**

## Presentation Schedule

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Nov. 30th, 1:10pm - 1:40pm Anil Bandari and Yinsong Chen;

Dec. 2nd, 1:10pm - 1:40pm Keni Mou, Gang Cheng and Hao Wang;

Dec. 2nd, 1:40pm - 2:10pm Wangshu Tu, Xiang Wang and Yifei Zeng;

Dec. 5th, 1:10pm - 1:40pm Alex McInroy, Josh Rovou and Michael Schepis;

Dec. 5th, 1:40pm - 2:10pm Xin Gu and Yu Hu;

Dec. 7th, 1:10pm - 1:40pm Shaofei zhao, Xiaolin Tang and Yanwei Jiang;

Dec. 7th, 1:40pm - 2:10pm Robert Stec and Chenxi Wang;

Grading points:

Slides (40%): you need to prepare slides that are clear, concise with great visualization of your results; Do not include too much technical detail;

Team presentation performance (30%, graded individually): you need to tell a story about your project; try to be as organized as possible and get right into the points; Your presentation should not be longer than 25 minutes; otherwise, you will be penalized;

Question/Answer performance (30%): you need to reserve 5 minutes for questions. The way you handle all questions must clearly show that you have sufficient knowledge of what you are doing. Otherwise, you will be penalized. I also encourage questions from the crowd, and if you ask a good question I will take a note in my heart :)

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<http://www2.math.binghamton.edu/> - **Binghamton University Department of Mathematical Sciences**

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[http://www2.math.binghamton.edu/p/people/gang/regression\\_i\\_fall2016](http://www2.math.binghamton.edu/p/people/gang/regression_i_fall2016)

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