

Statistics 327–1 & 4 & 7 & 11: Introductory Data Analysis with R (Intro R)

Check www.stat.wisc.edu/~byang/327-4 for updates to this tentative syllabus.

Goals

Students will use R to manipulate data and perform exploratory data analysis using introductory statistics. A student completing this course can do these things:

1. Use basic R vocabulary.
2. Manipulate data in R.
3. Produce graphics and reports.
4. Apply statistical methods.
5. Run basic simulations.

Here is a more detailed [course map](#).

Teachers

Name	Office	Office Hours	Phone	Email (please use our Q&A forum for non-private issues)
Yang, Bo (004 & 011)	Medical Sciences Center 1582	TR 11:00–12:00 (@ MSC 1475)	TBA	byang76@wisc.edu
Lee, Yongsu (001)	Medical Sciences Center 1245j	R 11:00–12:00 or by appointment	TBA	ylee525@wisc.edu
Mei, Yifan (007)	Medical Sciences Center 1201a	M 16:00–17:00 (@ MSC 1219)		yimei8@wisc.edu

TAs

Yu, Zhongjie (004 & 011)	zyu98@wisc.edu
Fan, Ning (001 & 007)	nfan@wisc.edu

Class Times

Lecture 327–001 (Lee)	TR 09:30–10:45	Ingraham Hall 122
Lecture 327–004 (Yang)	TR 13:00–14:15	Ingraham Hall 122
Lecture 327–007 (Mei)	TR 14:30–15:45	Ingraham Hall 122
Lecture 327–011 (Yang)	TR 09:30–10:45	Educ Sci 212

Prerequisite

An introductory statistics course. (No programming experience is necessary.)

Textbook

No textbook is required. We'll provide course notes, and we'll read R documentation and write R code.

Highly Recommended Books (not expensive)

[R in Action](#) by Robert Kabacoff (2015) (even good for Intermediate and Advanced R)

[R for Data Science](#) by Garrett Golemund and Hadley Wickham (2017) (even good for Intermediate and Advanced R, using some packages)

[Introductory Statistics with R](#) by Peter Dalgaard (2008) (good for mastering Base R)

[R for Excel Users](#) by John Taveras (2016) (good for beginners knowing Excel)

Optional Online Reading

[R for Data Science](#) by Garrett Golemund and Hadley Wickham (2017) (even good for Intermediate and Advanced R, using some packages)

[An Introduction to R \(pdf\)](#) by W. N. Venables, D. M. Smith and the R Development Core Team

[Advanced R](#) by Hadley Wickham (advanced)

[Intro to R video lectures](#) by Google Developers

[R Programming wikibook](#)

[Using R for Data Analysis and Graphics](#) by J. H. Maindonald

[The R Inferno](#) by Patrick Burns (advanced)

Optional Reference Books

[Data Manipulation with R](#) by Phil Spector

[Advanced R](#) by Hadley Wickham (advanced)

[R in a Nutshell](#) by Joseph Adler (2009)

[A Beginner's Guide to R](#) by Alain F. Zuur, Elena N. Ieno, and Erik Meesters (2009)

[Software for Data Analysis: Programming with R](#) by John Chambers (2008) (advanced)

Computing

A laptop is required in class.

Help

Many questions outside of class should be posted at our [Q&A forum](#). Please feel free to write answers when you know them. We are eager to help in class and office hours too.

Grades

During the fall and spring, this course runs in five weeks. The weekly workload of this one-credit, five-week course should be like that of a three-credit, one-semester course: 1 credit = (3 credits/semester)*(1/3 semester).

These points are available (we might revise this as we write course materials):

≈ 8 online quizzes (Quiz 1, ..., Quiz 8) ≈ 93

≈ 4 R or R Markdown scripts (hw1.R, hw2.R, hw3.Rmd, hw4.Rmd) ≈ 70

≈ 2 group practice exercises ≈ 10

Exam on reading and writing R code ≈ 75

Ask a question or make a comment in class ≈ 1

Answer a question on piazza ≈ 1

Total 250

We'll assign grades according to the percentage scale, A = [92,100], AB = [88,92), B = [82,88), BC = [78,82), C = [70,78), D = [60,70), F = [0,60) (92% of points => A); and according to the percentile scale, A = 70, AB = 60, B = 45, BC = 30, C = 10, D = 5, F = 0 (performing better than 70% of the class => A). Your grade will be the higher of these two grades.

Grades are recorded in Canvas. .

If you anticipate religious or other conflicts with course requirements, or if you require accomodation due to disability, you must notify me during the first two weeks of class. You may not make up missed quizzes, homework, or exams, except in the rare case of a documented, serious problem beyond your control.

I encourage you to discuss the course, including the online quizzes, with others, but you must write the R scripts and the exam by yourself and prevent others from copying your work. (See the UW [Academic Integrity](#) policy.)

Note that the registrar's [deadlines](#) for three-week courses are special: for our session, AEE (9/5–10/7/2018), the add deadline is 9/7/2018 and the drop deadline is 9/21/2018.

Tentative Schedule

Day #: Date	Subject	Before class	Homework due (11:59 p.m.)
01: Th 9/6/18	Install R and RStudio 1. R as a Calculator Demo of Quiz 1, online lecture, piazza.com	Read email Try Q1 Bring questions	
02: Tu 9/11	2. Vector Discuss HW1	Most of Q1 Try Q2	Quiz 1 (login help)
03: Th 9/13	3. Vector (continued) and List Discuss HW2	Most of Q2 Most of HW1 Try Q3	Quiz 2 hw1.R (submit)
04: Tu 9/18	4. Data Frame, Factor, Formula (flowers.csv) R Markdown (screencast)	Most of Q3 Try Q4	Quiz 3
05: Th 9/20	5. (Base) Graphics Group practice on graphics (to be continued) Discuss HW3 (first listen to RMarkdown, above)	Most of Q4 Most of HW2 Try Q5	Quiz 4 hw2.R (submit)
06: Tu 9/25	6. Statistical Tests and Confidence Intervals Group practice on graphics (continued) (submit one graphics.Rmd_per_group)	Most of Q5 Try Q6	Quiz 5

07: Th 9/27	7. Regression Discuss HW4 Group practice on Tests and Intervals (to be continued)	Most of Q6 Most of HW3 Try Q7	Quiz 6 hw3.Rmd (submit)
08: Tu 10/2	8. Simulation Group practice on Tests and Intervals (continued) (submit one tests.Rmd per group) Discuss exam	Most of Q7 Try Q8	Quiz 7
09: Th 10/4	Exam (rules)	Most of Q8 Most of HW4	Quiz 8 hw4.Rmd (submit)