# Syllabus
# AMS266A - Data Visualization and Statistical Programming in R

This course provides an introduction to both the R environment for statistical computing and to basic tools of data visualization, and their implementation in R.

**Instructors**
Abel Rodriguez (abel@soe.ucsc.edu).  Office hours held at JBE351 on Thursdays from 2:00PM to 3:00PM.

Daniel Spencer (daspence@ucsc.edu).  Office hours held at JBE119 on Mondays from 2:30PM to 3:30PM and Wednesdays from 9:00AM to 10:00AM

**Class time and location**
Tuesday 8:00AM to 9:35AM, Baskin Engineering, 156.

**Bibliography**
There are a number of excellent reference textbooks for R.  I particularly like

>  Venables, William N., and Brian D. Ripley. *Modern applied statistics with S-PLUS*. Springer Science & Business Media, 2013.

Other recommended books include:

>  Teetor, Paul. *R cookbook*. O'Reilly Media, Inc., 2011.
>  Zuur, Alain, Elena N. Ieno, and Erik Meesters. *A Beginner's Guide to R*. Springer Science & Business Media, 2009.
>  Dalgaard, Peter.  *Introduction to Statistics with R*.  Springer, 2002.

I also encourage you to check out the R manuals, which are available at

>  https://cran.r-project.org/manuals.html

In terms of general principles on data visualization, I recommend one of the following:

>  Yau, Nathan. *Visualize this.*  Wiley, 2011.
>  Yau, Nathan. *Data points: Visualization that means something*. John Wiley & Sons, 2013.
>  Cairo, Alberto. *The Functional Art.* New Riders, 2013
>  Few, Sthepen. *Show Me the Numbers – Designing Tables and Graphs to Enlighten.* Analytics Press, 2004.

Tuft, Edward. *The Visual Display of Quantitative Information.* Second Edition. Graphics Press, 2001.

**Class structure:**
The classes will be filled with examples. You are strongly encouraged to bring your own laptop to class so that you can replicate the examples shown by the instructor.

**Evaluation:**
Your own weekly homework: 40% of the final grade.
Peer-review of classmates homework: 20% of the final grade.
One final project: 40% of the final grade. You are free to use your own data for the final project.

**Tentative class schedule:**
10/03 – Introduction to R.

10/10 – Data input/out in R.

10/17 – Programming in R. **One page description of final project due.**

10/24 – Principles of data visualization.

10/31 – Data visualization in R.

11/07 – Case studies in data visualization.

11/14 – Advanced data visualization in R.

11/21 – Analyzing categorical data in R. **Two-page summary of analysis due.**

11/28 – Linear regression in R.

12/05 – Linear and non-linear regression in R. **Final project due.**