Course overview

Instructors

Jamie Lloyd-Smith

Mike Alfaro

Kirk Lohmueller

Grad student support

Monique Ambrose

Ana Gomez

Katie Gostic

Tanya Phung

Jonathan Chang

Learning objectives

By the end of the course students will:

•Be comfortable executing basic commands in the R environment.

•Be able to load packages in R and make use of their added functionality.

•Be able to read in data files, manipulate data, and perform simple analyses in R.

•Be capable of plotting curves, scatter−plots, histograms, and other graphic outputs in R.

•Be able to write their own computer programs to simulate population models in discrete or continuous time.

What R is…

- "R is an integrated suite of software facilities for data manipulation, calculation and graphical display."

- A free, open-source, community-built software package.

- Powerful, flexible computational tool with a broad array of add-on 'packages' that perform advanced analyses.

- A high-level "interpreted" programming language for scientific computing.

- A powerful platform for statistics.

- A major research tool in ecology and other fields.

What R isn't…

- A commercial package

- A drop-down menu environment

- Excel

- JMP, SPSS, SAS, etc.

- Matlab

Why we choose to teach the course using R

- It is a standard platform for much EEB research

- It is free.

- There is an ever-growing library of resources showing you how to tackle various research problems using R.
  - Many methodological books being re-published with 'in R' added to title
  - Springer series 'Use R!' is available free through UCLA library

- User-built packages are very powerful, always changing as the field progresses.

- Once you learn principles of programming in R, it is easy to apply them to programming in another high-level language (such as Python or Matlab).

Course schedule

Wednesday 16 September

Introduction to bootcamp and R *Alfaro, Lloyd-Smith, Lohmueller*

Why you love version control *Jonathan Chang*

Flow control, scripts, functions *Alfaro*

R Challenges (**at least one commit to your repo by 1:00 PM**)

Review of programming basics *Lloyd-Smith*

Introduction to dynamic models *Lloyd-Smith*

Dynamic modeling challenges **(at least one commit by 6:00 PM)**

Thursday 17 September

Review - *Lohmueller*

Plotting in R - *Lohmueller*

Plotting challenges **(at least one commit to your github repo by 6:00 PM)**

Thursday 24 September 24

All exercises must be completed and committed to your repo. This does **not** mean they should take a week. **Do them now.**

Grad students will hold limited office hours for people who need help.