# Resources

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This page collects learning resources for scientific computing. Several chapters keep their own resource lists, so this page points to those lists rather than repeating them:

- R Coding Practices: Additional Resources - books on R, R packages, Shiny, and Git for R users
- R Coding Practices: Tidyverse - tidy evaluation, programming with `{dplyr}`, and a skeptical view
- Continuous Integration - CI services and tools for R packages
- Quarto - Quarto documentation, templates, and `{litedown}`
- Git and GitHub - GitHub Learn, the UC Davis DataLab Git sandbox, and graphical Git clients
- Unix - shell tools and The Missing CS Quarter at UC Davis

### Resources for R

- Awesome R Package Development Tools - curated list of tools for R package development
- Tidyverse style guide - the style guide behind R Code Style
- Tidyverse Skeptic - Norm Matloff's essay arguing that beginners should learn base R before the Tidyverse (source; summarized in A Skeptical View)
- Hadley Wickham's R Style Guide - the style chapter of the first edition of *Advanced R*
- Tidyverse data-dict - open specification and CLI tool for creating, validating, and documenting data dictionaries in YAML format

### UC Davis DataLab workshops and tutorials

The UC Davis DataLab provides workshops and learning materials for data science:

- Workshop Index - catalog of all DataLab workshops
- R Basics Workshop - foundational R programming for beginners
- Research Toolkits - guides for research tools and methods

- Install Guides - setup instructions for data science software

### Cheat sheets

- Data transformation with dplyr cheat sheet
- Data tidying with tidyr cheat sheet
- Data visualization with ggplot2 cheat sheet
- data.table cheat sheet
- R Markdown cheat sheet

## Resources for Git and GitHub

- GitHub Skills: Introduction to GitHub - an interactive exercise, under an hour long, on branches, commits, and pull requests

## Resources for Python

- UC Davis DataLab Python Basics Workshop - foundational Python programming
- Natural Language Processing with Python - text analysis and NLP techniques
- Jupyter Notebooks in a Git Repository - guide by Matthias Geier on managing Jupyter notebooks in Git repositories, including workflows for stripping cell outputs before committing and strategies for sharing executed notebooks

## Resources for Julia

- UC Davis Julia Users Group Julia Basics Workshop - foundational Julia programming

## Open science and reproducibility

- The Open Science Manual - an open-source guide from the ARCA group at the University of Padova covering programming good practices, version control, and reproducible workflow tools.
- Openscapes - an open science mentorship and community initiative founded by Dr. Julia Stewart Lowndes, focused on helping research groups transition to data-intensive, reproducible, and collaborative scientific practices through cohort-based Champions programs and shared open tooling.

Source

Adapted from the Resources chapter of the UCD-SERG lab manual, whose R resource lists began in the Benjamin-Chung Lab Manual by Jade Benjamin-Chung and Kunal Mishra.