Syllabus – Short Course on R Tools (SCoRT)

Course Information

Course Title: Short Course on R Tools (SCoRT)
Meeting Time: Mon–Wed, Aug 11–13 & Aug 18–20, 5:00–7:00 pm IRT
Location: PGU BigBlueButton
Website: https://bit.ly/SCoRT

Instructor Details

- **Instructors:** Mehdi Maadooliat & Hossein Haghbin
- **Office Hours:** Right after class

Course Description

This short, intensive course equips participants with practical, modern **R** skills to extend, optimize, and share their work. Over six sessions you'll learn OOP in R, build Shiny apps, speed up code with Rcpp, call Python from R with `reticulate`, build professional R packages, and collaborate on GitHub—including an overview of the CRAN release process.

Learning Outcomes

By the end of the course, participants will be able to:

- Apply R's OOP systems (S3/S4/R6) to structure code.
- Build interactive Shiny web applications.
- Improve performance by interfacing with C++ via **Rcpp**.
- Integrate Python into R workflows using **reticulate**.
- Develop, document, test, and share professional R packages.
- Use Git/GitHub for version control, releases, and prepare for CRAN submission.

Prerequisites

- Working knowledge of R and basic data analysis concepts.
- Some familiarity with the command line and version control is helpful (not required).

Materials

- **Primary Resource:** Course website — https://bit.ly/SCoRT
- Supplemental tutorials, templates, and datasets will be provided in class.

Assignments & Assessment

- **Homework (2):** Short, hands-on tasks reinforcing each block (due Aug 15 & Aug 22).
- **Optional Mini-Project:** Create a small R package or Shiny app integrating course concepts.

No exams. Due to the short format, late submissions are not accepted except for documented emergencies.

Attendance

Active participation is expected; sessions build on each other.

Academic Honesty

Discuss concepts with peers but submit your own work.
Use of AI coding tools (e.g., ChatGPT, Copilot) is allowed **for code** if you cite usage; do not submit AI-generated narrative as your own. You are responsible for understanding any code you turn in.

Important Note

This syllabus may be updated; any changes will be announced in class and on the course website.