PSY349: R Programming in Psychology

Maryville College

Summer 2022

Real Time Virtual

Instructor: Zachary Himmelberger

Email: zach.himmelberger@maryvillecollege.edu

Office: 129D Sutton Science Center

Office Hours: By Appointment

Zoom: class Zoom link

General Information

Prerequisites: PSY101 (Introductory Psychology) and Sophomore standing

Required Texts:

1) Peng, R. D. (2015) R Programming for Data Science. Victoria, British Columbia: Leanpub

This book is available at https://leanpub.com/rprogramming. The book has a suggested price of $20, but the author allows you to download it for free. A physical copy can be purchased here.

2) Wickham

This book is available for free at https://r4ds.had.co.nz/index.html. You can also purchase a physical copy here.

Course Website: This course will use Tartan Blackboard (http://mctartan.com)

Syllabus: As the instructor of this course, I reserve the authority and discretion to revise this syllabus and course schedule. Although the content of the syllabus may change, the exam and assignment dates will likely stay the same. I will notify you of any changes as early as possible.

Course Description

This course will build on the student's understanding of programming and data analysis using the statistical software R. Students will build on basic R programming knowledge, though other related technologies will be discussed. Topics covered include creating custom functions, data cleaning using the dplyr package, graphing using the ggplot2 package, and best practices.

Course Objectives:

1) Students will be able to implement custom functions to solve real-world problems.
2) Students will be able to 'clean' messy data using the R packages in tidyverse.
3) Students will use the R package ggplot2 to graphically represent data.
4) Students will use R to solve a problem commonly faced by professionals in their field, and they will showcase this to potential employers.

The learning outcomes described above will be assessed through mastery checks and a customized project.

Course Requirements

Mastery Checks (45%): Each class will end with a programming challenge that will assess your understanding of the new material. I will assess your general programming knowledge, ability to clean a real-world dataset, and graphically represent data. Some questions may require you to write code on paper, write R scripts to solve a contrived problem, or solve a real-world problem. All mastery checks will be weighted equally.

Attendance and Participation (20%): It is expected that you will be in class and participate fully. You will be given a grade after each class that incorporates your attendance for the full class period, active participation, and in-class coding exercises. The in-class exercises are very important for helping you master the material, and are graded on effort.

Customized Project (35%): You will decide on a project that uses R or a related technology. The project should be relevant to your future career path or directly related to your academic program. You must get permission from the instructor to ensure that you project is sufficiently involved, difficult, and appropriately related to your career aims. You must be able to promote your project to graduate schools or potential employers. More detail will be provided in class.

Assigned Readings: Readings will be assigned for most class periods, and it is expected that you will complete these assignments **before** the class in which they are discussed. This will enable you to participate more fully in class discussions and activities, and strengthen the connections you make to new material presented in class.

Please note, because of the great breadth of material covered in this course, I will not go through all the information from the readings in class. You may be evaluated on all assigned readings, regardless of whether they are also discussed in class.

Grading Scale

A	93	B-	80	D+	67

A-	90	C+	77	D	63
B+	87	C	73	D-	60
B	83	C-	70	F	<60

Course Policies and Professionalism

Attendance: Attendance is both required and expected. **Being prepared and attending class is critical for student success.** However, I also understand that there are valid reasons for missing class (e.g., illness, official college functions, death in the family). Therefore, **missing two classes will result in a 5% reduction in your final grade with a further reduction of 5% for every additional class missed**.

Excused absences will not be included in the allowable absences. For an absence to be excused, you must be required to represent the college as an official member of a college-sanctioned group or have a note from a doctor stating that you cannot attend class for medical reasons. Please see the instructor with any questions.

Remember, it is your responsibility to complete all work for the class, whether an absence is excused or unexcused. It is also your responsibility to be aware of the attendance policy and keeping track of your absences.

Grade Disputes: Disputes regarding grading should be addressed by making an appointment with me within one week of receiving the grade.

Late Assignments: It is up to the instructor's discretion to accept late assignments (with or without a penalty). For the late work to be considered, the student must contact the instructor prior to the due date.

Statement on Diversity & Nondiscrimination: As an academic community, our educational mission is enhanced by the robust exchange of ideas that occurs between a diverse student body, faculty, and staff within a respectful and inclusive learning environment. I expect all students to respect the ideals of individual worth and human dignity, and to maintaining a nurturing and respectful learning environment.

Maryville College does not discriminate on the basis of race, color, gender, ethnic or national origin, religion, sexual orientation, age, disability, or political beliefs in provision of educational opportunities and benefits (MC Statement of Non-Discrimination).

Code of Academic Conduct Statement: I expect all Maryville College students 'to act with integrity in all interactions – academic, personal, and beyond' (MC Covenant). All acts of academic dishonesty in any work constitute academic misconduct and will not be tolerated. This includes, but is not limited to, cheating, plagiarism, self-plagiarism (including the submission of assignments that have previously been submitted to this class or another), fabrication of information, misrepresentations, and abetting any of the above.

Academic Support Center, Disability Services, & Accommodations: Students with a disability requiring accommodation or any student who believes that they will require accommodations due to a disability should contact Debbie Stietenroth at 865-981-8120 or Debbie.stietenroth@maryvillecollege.edu, in the Academic Support Center. Students are encouraged to make contact before or during the first week of classes.

Course Schedule

Date	Time	Topic	Reading
June 1	3:00-5:30	Syllabus, History, Big Picture, Markdown, Basics of R syntax	Peng Ch. 3, Peng Ch. 5, Wickham Ch. 27
June 2	3:00-5:30	Data Types, Vectors, and Subsetting	Peng Ch. 10
June 3	3:00-5:30	Loops, Control Flow	Peng Ch. 14
June 6	6:00-8:30	Functions	Peng Ch. 15
June 8	6:00-8:30	Apply and Map	Peng Ch. 18
June 10	6:00-8:30	tidyverse, dplyr verbs	Peng Ch. 13, Wickham Ch. 5
June 13	6:00-8:30	ggplot2	Wickham Ch. 3, Wickham Ch. 28
June 15	6:00-8:30	GitHub	Peng Ch. 17
June 17	6:00-8:30	Putting it all together	
		June 18 – July 5 is TBD	