

Cover Sheet: Request 14330

STA3XXX Programming With Data in R

Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Michael Daniels daniels@ufl.edu
Created	10/10/2019 1:30:51 PM
Updated	11/17/2019 2:29:51 PM
Description of request	This is one of three new course that will be part of the new data science major

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	CLAS - Statistics 011623000	Michael Daniels		10/11/2019
No document changes					
College	Conditionall Approved	CLAS - College of Liberal Arts and Sciences	Joseph Spillane	The College Curriculum Committee conditionally approves this request, with the following: add "in R" to the course title and transcript title; 2) add a 15th week to the weekly schedule of courses; 3) remove the first word ("an") from the course description	11/16/2019
No document changes					
Department	Approved	CLAS - Statistics 011623000	Michael Daniels	made the requested changes except for adding 'in R' to transcript title (not enough allowed characters)	11/16/2019
No document changes					
College	Approved	CLAS - College of Liberal Arts and Sciences	Joseph Spillane		11/17/2019
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			11/17/2019
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					

Step	Status	Group	User	Comment	Updated
No document changes					

Course|New for request 14330

Info

Request: STA3XXX Programming With Data in R

Description of request: This is one of three new course that will be part of the new data science major

Submitter: Michael Daniels daniels@ufl.edu

Created: 11/16/2019 4:35:43 PM

Form version: 3

Responses

Recommended Prefix STA

Course Level 3

Course Number XXX

Category of Instruction Intermediate

Lab Code None

Course Title Programming With Data in R

Transcript Title Programming With Data

Degree Type Baccalaureate

Delivery Method(s) On-Campus

Co-Listing No

Effective Term Earliest Available

Effective Year 2020

Rotating Topic? No

Repeatable Credit? No

Amount of Credit 3

S/U Only? No

Contact Type Regularly Scheduled

Weekly Contact Hours 3

Course Description Introduction to statistical computing and programming with data. Topics include basic programming in R; data types and data structures in R; importing and cleaning data; specifying statistical models in R; statistical graphics; statistical simulation using pseudo-random numbers; reproducible research and the documentation of statistical analyses.

Prerequisites STA2023 (B) or STA3032 (B-) or AP statistics (4 or 5)

Co-requisites N/A

Rationale and Placement in Curriculum This will be a core course for both the statistics major and the new

data science major. It will provide students with the computing skills and knowledge required for the acquisition, manipulation, and statistical analysis of data. Mastery of the course concepts will help prepare students for success in more advanced courses in both the statistics and data science majors.

Course Objectives - Write simple functions in R using data structures and control structures effectively.

- Import data from various sources into R and prepare the data for analysis.

- Determine statistical graphics appropriate to a statistical analysis and produce them using R.

- Formulate statistical models in the R language.

- Perform and document a basic statistical analysis.
- Carry out simple statistical simulations and report the results.

Course Textbook(s) and/or Other Assigned Reading Title: Hands-On Programming with R

Author: Garrett Grolemund

Publisher: O'Reilly Media

Date: 2014

Note: Available free online at https://urldefense.proofpoint.com/v2/url?u=https-3A__studio-2Deducation.github.io_hopr_&d=DwlBAG&c=sJ6xIWYx-zLMB3EPkvcnVg&r=mmBpeC_l4h9x9plwikQalZxl0rn0pgOinhropJ2VqQc&m=Bw_aJdC5wjeWTqCkhGbXR3QXzVC2-a8VtqIM7s0dOc4&s=Feb9l84CsrFTcHjYPpDhNjsw9k7nT4A4KyHTYj64K-s&e=

Title: R for Data Science

Author: Hadley Wickham and Garrett Grolemund

Publisher: O'Reilly Media

Date: 2017

Note: Available free online at https://urldefense.proofpoint.com/v2/url?u=https-3A__r4ds.had.co.nz_&d=DwlBAG&c=sJ6xIWYx-zLMB3EPkvcnVg&r=mmBpeC_l4h9x9plwikQalZxl0rn0pgOinhropJ2VqQc&m=Bw_aJdC5wjeWTqCkhGbXR3QXzVC2-a8VtqIM7s0dOc4&s=z0ODa4CF_42ePYjTIZ6-O2-_eoiYADk9W5146plQ4d0&e=

Weekly Schedule of Topics Week 1

- A Brief History of Statistical Computation
- Installing R
- Using the R Console
- Using RStudio
- Other interfaces to R
- Extending R: the R package system

Week 2

- Introduction to programming in R

Week 3

- Probability via computer: generating data via simulation
- Examining simulation results with summary statistics and simple graphics

Weeks 4-5

- Types of variables and data
- Data types in base R
- Importing data from files and other programs
- Data structures in base R

Week 6

- Review of basic statistical inference and graphics
- Basic statistical inference and graphics in R

Week 7

- Introduction to data scraping
- Working with character strings in R
- Cleaning, transforming, and organizing data

Week 8

- The concept of tidy data

- Introduction to the Tidyverse: modern data structures in R

Week 9

- Review of simple linear regression
- Simple linear regression in R

Week 10

- Introduction to multiple regression
- Model formulas: specifying models in R
- Fitting linear models in R

Week 11

- Introduction to logistic regression
- Logistic regression in R

Week 12

- The grammar of graphics: ggplot2

Week 13

- Reproducibility in science
- The practical advantages of a reproducible statistical analysis
- Literate data analysis: documenting a statistical analysis

Week 14

- Version control and collaboration: an introduction to git

Week 15

- Review

Grading Scheme Grades will be based on homework, quizzes, and two in-class exams. Homework will consist primarily of computer-based programming and data analysis exercises and projects.

Homework/programming assignments 40%

Quizzes 10%

Exam 1

25%

Exam 2

25%

Grades will be assigned as follows: 92.5-100, A; 90.0-92.4, A-; 87.5-89.9, B+; 82.5-87.4, B; 80.0-82.4, B-; 77.5-79.9, C+; 72.5-77.4, C; 70.0-72.4, C-; 67.5-69.9, D+; 62.5-67.4, D; 60.0-62.4, D-; 0-59.9, F
Numeric scores will be rounded up to the nearest tenth.

Instructor(s) Brett Presnell

Attendance & Make-up Yes

Accommodations Yes

UF Grading Policies for assigning Grade Points Yes

Course Evaluation Policy Yes