BZAN 6351

Basic Programming for Business Analytics

Spring 2022

Instructor: Cheng Wang
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Instruction Mode: Asynchronous Online

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Office Hour on Zoom:
Cheng-Thursday 7:30-8:30 PM (link on Blackboard)
TA-Tuesday and Thursday 3-5 PM (link on Blackboard)
Course website: Blackboard

COURSE DESCRIPTION:

This course is designed to introduce the fundamental of programming for business analytics using R. R is a powerful language for data management, visualization, and predictive modeling; it is now one of the most popular languages in business analytics. In this course, you'll be learning about the basics of R, and you'll end with the confidence to write your own R scripts.

LEARNING OBJECTIVES:

This course takes you from having no previous experience in programming to an intermediate level in R. Upon completion of this course, students should be able to:
• Use RStudio, read R documentation, and write R scripts.
• Use R programs to perform data manipulation/management and analysis tasks.
• Produce basic graphics and more advanced graphics using ggplot2 library.
• Learn data manipulation with tidyverse, magrittr, and dplyr package
• Learn further R on your own, or other programming languages.
• Develop professional skills: creative thinking, critical thinking, and self-directed learning.

PREREQUISITE:

1. Graduate standing and admission to the MS/BZAN. Basic knowledge of statistics is presumed.
2. Prior programming experience is useful, but neither required nor presumed.
3. Basic computer skills are expected, including accessing Blackboard and your email, downloading and uploading files, connecting to the internet and using a search engine.

If you experience technical difficulties, please contact UH Blackboard Support or University Information Technology services.

TEXTBOOKS & Resources:

The following textbook are available for free online. Students can use them as reference. You don't have to purchase a hard copy.

- *R for Data Science*

  link: *https://r4ds.had.co.nz/* by Garrett Grolemund and Hadley Wickham

- *simpleR – Using R for Introductory Statistics*

  link: *https://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf* by John Verzani
  This textbook is recommended for students who want to know more about statistics.

I will provide other required materials and resources on the course site.

Software Requirement (Free)

- R latest version (Students can get this open source statistical software at http://cran.r-project.org/bin/windows/base/)
- RStudio latest version (Available at https://www.rstudio.com/products/rstudio/download/)
- DataCamp Access (Students will get free access during the course period www.datacamp.com/)

Class format

This class uses asynchronous online teaching format. Course contents will be delivered online through the Blackboard course system. On the course site, you will access online lessons, course materials, and additional resources. We will also hold online office hours to answer questions and exam reviews.

Please note: It is your responsibility to keep track of course materials available dates, homework dates, exam and review section dates, and project due dates

Homework

Homework is to be submitted on the due date indicated in the Course Schedule. Please be sure to keep a copy of the assignment by yourself in case that there is any problem with your submission or you have to use it later this semester. **No late submissions will be accepted**.

You may have discussions with your class members, but you have to submit your own work. Every line of text and line of code that you submit must be written by you personally. You may not refer to another student's code. **Copied work will receive no credit**.

Our assignments are given on DataCamp (access will be provided by faculty). Specifically, I expect you to finish the following,

- Assignment 1-Introduction to R
- Assignment 2- Introduction to Data Visualization with ggplot2
- Assignment 3- Introduction to Regression
- Intermediate R (optional, for bonus 2 points added to the final grade)
- Multiple and Logistic Regression in R (optional, for bonus 2 points added to the final grade)

Exams.

We have 3 exams. Exams are not cumulative.

The exams cannot be retaken or taken at other than the scheduled time except under the most extreme circumstances, subject to approval from the instructor. Permission must be granted *before* the missed exam.

You are expected to take the exams on your own laptops. It is your responsibility to have **all the needed programs installed** (i.e., R, RStudio, Internet access).
Further information about the Exam time and logistics will be provided under the appropriate tabs or links on our Bb site.

Collaboration of any kind is strictly forbidden on all homework, exams and the final project. Violations will be reported to Bauer College administration, and result in severe academic sanction.

Contacting the Professor.

The best way to reach me is through email. Please allow one business day for email responses. I am expecting a newborn this fall and may not reply your emails in a timely manner during the time I am in the hospital. Please contact the TA for any questions you have.

If you find that you have any trouble keeping up with homework or other aspects of the course, make sure you let me know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing me when difficulties arise during the semester so that I can help you find a solution.

GRADING:

Assignment 1 10%

Assignment 2 10%

Assignment 3 10%

Project 10%

Exam 1 20%

Exam 2 20%

Exam 3 20%

Final course letter grade follows the numeric-letter grade system shown in the table below.

Grade	Raw Score	Grade	Raw Score
A	> or =92	C	> or =74, but <77
A-	> or =89, but <92	C-	> or =70, but <74
B+	> or =86, but <89	D+	> or =67, but <70
B	> or =83, but <86	D	> or =63, but <67
B-	> or =80, but <83	D-	> or =60, but <63
C+	> or =77, but <80	F	<60

Grades will be curved based on the grading rule provided by Bauer. Grades are earned on the basis of performance in this course, not given on the basis of need or effort. Grades will not be rounded up or curved. No exceptions. NOTE: Grades are not negotiable. I do not reply to email requesting a grade change or extra credit.

COURSE POLICIES:

Missed Exams: The student is responsible for obtaining material. This can be done through contacting a classmate or by contacting the Professor. Missed or late exams cannot be made up under any circumstances, unless an official excuse is provided. **Any uncoordinated, unexcused missed exam will result in a score of 0 for that exam.**

Recording of Class: **Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor**. If you have or think you may have a disability such that you need to record class-related activities, please contact the Center for Students with Disabilities. If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. **Instructor's recordings are not authorized to be shared with *anyone* without the prior written approval of the instructor.** Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes: Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through.

Academic Dishonesty: Plagiarism and cheating are serious offenses and may be punished by failure on exam, paper or project; failure in course; and or expulsion from the University. For more information, refer to the "Academic Honesty Policy" accessible here

(http://www.uh.edu/provost/policies/honesty/). The University of Houston Academic Honesty Policy is strictly enforced by the C. T. Bauer College of Business. No violations of this policy will be tolerated in this course. Students are expected to be familiar with this policy.

Need for Assistance: If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as outlined in this document, or which will require academic accommodations, please notify me as soon as possible. I will recommend that you contact the Center for Students with Disabilities. The contact person is Justin Dart in the CSD building #568, room 110. The numbers for the CSD office are Ph: 713-743-5400; TDD: 713-749-1527; Fax: 713-743-5396 or email: uhcsd@central.uh.edu. Also available to you is *Counseling and Psychological Services (CAPS),* which can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. In addition, there is no appointment necessary for the "Let's Talk" program, which is a drop-in consultation service at convenient locations and hours around campus. http://www.uh.edu/caps/outreach/lets_talk.html.

Inclement Weather or Technical Problems: In case of inclement weather or technological problems that prevent the University from providing access to course materials you may contact the Professor by phone via the numbers given above or send the Professor an email inquiry. In addition, the Professor will notify students as soon as possible in such instances and provide instructions on how the course will proceed.

Student Responsibility and Expectations • College Ethics • Academic Honesty • Daily Health Self-Assessment • Face Covering Policy • Improve Online Synchronous Experience • Video Recording Class • Reporting Technical Issues • Student Accessibility Center • Counseling and Psychological Services (CAPS)	Behavioral expectations and etiquette students should follow during class and/or when posting information online within an email, Blackboard, or other online sites. UH Responsibility http://catalog.uh.edu/content.php?catoid=6&navoid=1082 UH Student Behavior and Conduct https://www.uh.edu/dos/behavior-conduct/ College of Education General Ethics Guide https://www.coe.uh.edu/mycoe/collegedata/COE_Ethics_Guide.pdf Academic Honesty http://catalog.uh.edu/content.php?catoid=6&navoid=1025 COVID-19 Guidelines and Protocols https://www.uh.edu/covid-19/guidelines-protocols/ Student Accessibility Center http://www.uh.edu/accessibility Counseling and Psychological Services (CAPS) • UH Main Campus: http://www.uh.edu/caps/outreach/lets_talk.html • UH Sugarland: http://www.uh.edu/dsaes/uhsugarland

COURSE SCHEDULE:

Important: If necessary, this syllabus will be modified. Any modifications to the syllabus will be posted on the course site and email notification will be distributed to course participants.

Week	Date	Topics	Assignments	Exams
1	Jan 18 -Jan 21	Unit 1. Introduction and Set-up		
2	Jan 24 - 28	Unit 2. R Basics and Introduction to Data		
3	Jan 21 - Feb 4	Unit 3. R Programming Fundamentals		
4	Feb 7 - Feb 11	Unit 4. Data Frames		
5	Feb 14 - Feb 18	Review and Exam 1	Introduction to R	Exam 1 on Feb 17th
6	Feb 21 - Feb 25	Unit 5. Data Visualization		
7	Feb 28 - Mar 4	Unit 6. R Packages and ggplot2		
8	Mar 7 - Mar 11	Unit 7. ggolot2 Part2		
9	Mar 14 - Mar 18	Spring Holiday		
10	Mar 21 - Mar 25	Review and Exam 2	Introduction to Data Visualization with ggplot2	Exam 2 on Mar 24
11	Mar 28 - Apr 1	Unit 8. Pipe Operator		
12	Apr 4 - Apr 8	Unit 9. Data Manipulation with dplyr		
13	Apr 11 - Apr 15	Unit 10. Correlation and Simple Regression		
14	Apr 18 - Apr 22	Unit 11. Multiple Regression		
15	Apr 25 - Apr 29	Review and Exam 3	Introduction to Regression in R	Exam 3 on Apr 28