Department of Decision and Information Sciences

BZAN 4397/6351: Selected Topics in Business Analytics:

Basic Programming for Business Analytics

Fall 2018

Instructor: Dr. Jinghui (Jove) Hou ("Hou" is pronounced as / hōl/)
Office hours: Tuesdays 12:30 – 2:00 PM (290A Melcher), or by appointment
Email:

Course format: Hybrid
Class meetings: Online (asynchronous), or Tuesday 10 – 11:30 AM (Melcher Hall 120)
Course website: see 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.
- Report results of statistical analyses with R Markdown.
- Learn further R on your own, or other programming languages.
- Develop professional skills: creative thinking, critical thinking, and self-directed learning.

PREREQUISITE:
1. STAT 3331. Some 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:
Required materials:

- The following texts are available for free online. Students may find it useful to own a personal copy of one or two of the texts.
  R for Data Science, by Garrett Grolemund and Hadley Wickham
  R Programming for Data Science, by Roger Peng
- I will provide other required materials and resources on the course site.

Reference textbook:

- The following texts are recommended for students who want to know more about statistics.
  Statistics with R (available on Blackboard)
  Using R for Introductory Statistics, by John Verzani (PDF Downloadable)

COURSE METHODS:

1. Hybrid format. This class uses a hybrid 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 some sections in the classroom (MH 120). These face-to-face sections are scheduled for exams and reviews. The schedule for these sections is in the Course Schedule on the last pages of this syllabus. A detailed schedule is provided in the Course Calendar.

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 (see the Course Calendar for details, which is available on Blackboard).

2. Homework. Homework is to be submitted by 4pm on Fridays 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 hand-in/online 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.

3. Exams. There will be 3 exams. Exams will cover all material presented up to the exam date. Notice that this class is very cumulative. Thus, for instance, the third exam will cover material presented up to the exam date but with emphasis on the material presented after the second exam.

You are expected to take the exams on your own laptops. Thus, you must bring your laptop to the classroom to take the exams. It is your responsibility to have **all the needed programs installed** (i.e., R, RStudio, Internet access).

4. Final Project. The final project for the class will ask you to explore some questions using a dataset that I will provide. Regardless of grading basis, **students must receive a score of at least 50% on the final project (e.g., 13/25) in order to pass the class**. More instructions will be provided.

5. Collaboration and Cheating. Collaboration of any kind is **strictly forbidden** on all exams and the final project. Violations will be reported to Bauer College administration.

6. Contacting the Professor. The best way to reach me is through email. Please allow one business day for email responses. Thus, if you send a message on Friday evening, you may not hear back until Monday afternoon. Please plan accordingly.

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:

Homework	30%
Exam #1	10%

Exam #2	15%
Exam #3	20%
Final project	25%

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 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. **For example, if you earn an 85.9999%, you will receive a "B", not a "B+".** No exceptions. NOTE: Grades are not negotiable. I do not reply to email requesting a grade change or extra credit.

COURSE POLICIES:

Missed Classes: The student is responsible for obtaining material, which may have been distributed in class when he/she was absent. This can be done through contacting a classmate who was present or by contacting the Professor during her office hours or other times. 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.**

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.

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.

WK	Date	Topics	
1	Aug. 20 – 26	Unit 1. Introduction and Set-Up	Homework 0
2	Aug. 27 – Sep. 2	Unit 2. R Basics and Introduction to Data	
3	Sep. 3 – 9	Unit 3. Data Frames	Homework 1
4	Sep. 10 – 16	Unit 4. R Programming Fundamentals	Homework 2
		Review section #1 (Sep. 11)	
5	Sep. 18	Exam #1	
6	Sep. 24 – 30	Unit 5. R Packages and dplyr	
7	Oct. 1 – 7	Unit 6. Data Manipulation with dplyr	Homework 3
8	Oct. 8 – 14	Unit 7. Data Visualization with ggplot2	Homework 4
		Review section #2 (Oct. 9)	
9	Oct. 16	Exam #2	
10	Oct. 22 – 28	Unit 8. Statistical tests and models	
11	Oct. 29 – Nov. 4	Unit 9. Linear regression	Homework 5
12	Nov. 5 – 11	Unit 9. cond.	Homework 6
		Review section #3 (Nov. 6)	
13	Nov. 13	Exam #3	
14	Nov. 19 – 25	Happy Thanksgiving! – No Class	
15	Nov. 26 – Dec. 2	Unit 10. Course Summary	
16	Dec. 3 - 7	Final exam week	Final project due Dec 5.

Note. Course calendar is available on Blackboard. Make sure you keep a copy of it.