SIMON
BUSINESS SCHOOL
UNIVERSITY of ROCHESTER

GBA464 – Programming for Analytics

Course Syllabus (last modified 07/27/2022)

Prefall 2022

Course Logistics:

Lectures: Mon, Tue, and Thu, 10am-12pm, or 1pm-3pm, or 3:20pm-5:20pm
Labs: Fri, 10am-11am, or 11:15am-12:15pm, or 1:30pm-2:30pm
Location: Schlegel Room 107
Class schedule: full weeks for Mon, Jul 25 to Friday, Aug 19 and one more lecture on Tue, Aug 23
Final exam: Thu, Aug 25
Please mark your calendar for these dates and times

Instructor:

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Lab instructor:

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Teaching Assistants:

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Office Hours:

Sid: Tuesdays, 4:45-6:45pm, TBD
Yufeng: Wednesdays, 4-6pm, Carol Simon Hall, 3-221
Minjie: Thursdays, 4:45-6:45pm, Carol Simon Hall, 3-227 (“Fishbowl”)
Kang: Fridays, 4-6pm, Carol Simon Hall, 3-227 (“Fishbowl”)

Course Information

1. Course Description and Learning Objectives

   GBA464 provides foundations for programming in the R environment. We cover traditional programming concepts such as operators, data structures, control structures, repetition, and user-defined functions. In addition, these concepts will be taught in the context of marketing and business analytics problems related to data management and visualization. Other than high-level programming, the students will gain a foundational understanding of how data is can be stored, organized and pulled, in a given data analytics context. In class, I provide lectures and some demonstrations in class and will conduct a few hands-on tutorial assignments. Out of class, students are expected to complete three individual assignments and one group assignment.

2. Textbooks and Required Material

   There is no required textbook. The course materials largely include lectures and notes provided directly by the instructor. In addition, mirroring the real world of programming, students are encouraged to use Google (or other search engines) and the numerous freely-available online resources to search for relevant materials and help for specific issues they encounter.

   All class sessions are recorded, and students can view the recording after the class.

3. Evaluation and Grading

   The course grade is based on the following:

Class Participation	10%
Homework assignments	4*10%
Final Exam	50%
Total	100%

(1) Class participation
Students should attend the classes in person (exceptions below). Participation scores are measured as the number of participated lectures / the total number of lectures minus the first lecture. The total number of lectures (minus the first lecture) is 12. Each student has one opportunity to miss class without a penalty. For example, if a student misses one out of 12 lectures, the student will get full participation points (10%). If the student misses two lectures, the student will get 11/12*10% = 9.17% instead of 10%.

Students should log their attendance in the "Attendance" section of the Blackboard (learn.rochester.edu). That button leads to a Qwickly link to the course. At the beginning of every class, I will start a sign-up session that is valid within the first 15 minutes of the class. I will write down the passcode on the screen and on blackboard (the physical one), so that students in the classroom can use the link to log their attendance. Students who failed to sign up during this window (regardless of reason) will miss this class's attendance points. Sending code to others who are not present in the room is considered an academic integrity violation (!!).

Excuses. Students who have reasons to miss a class (e.g., sick or urgent business) should send me an email before the start of that class. I will mark the student as "excused" and will not deduct points for that occasion. Remember: Being late for more than 15 minutes is treated as an absence, and notifying me after the fact does not count. However, each student has one chance to be absent without deduction of any points.

Students who have tested positive for COVID or are instructed by the UHS to quarantine should stay at home. In those cases, the student should send me an evidence of the positive test and ask me or a TA for a Zoom link to join the 10am session (GBA464.23) remotely. Participation of the Zoom session is monitored, and students should not join the session or try to obtain Zoom link without an approval from the school or myself.

(2) Homework assignments

The four homework assignments all involve writing code that uses the language concepts introduced in the course to solve business problems. The assignments will be more demanding than some of the in-class examples and will require students to integrate the programming knowledge into a structured way of using code to produce desired datasets or data visualizations. They are graded based on a comprehensive set of rules, including the correctness of results, the readability of code and how efficient the results to convey key managerial insights.

The due dates for all assignments are Sundays, at 11:59pm Eastern Time (i.e., New York time) (i.e., before Monday). Individual assignments should be submitted through Blackboard. The group assignment can be submitted via email. Late submissions are marked by the system. Submissions that are more than an hour late will not be graded.

(3) Exam

The exam is comprehensive and involves writing and editing programs to solve specific problems. The exam consists of two parts. The first part is closed-book and is relatively simple. The second part is open-book and with access to a computer, and involves solving more comprehensive problems. The exam will be held synchronously in the classroom. Details will follow.

(4) Grading policy

Each student's numeric grades, according to the above-described weights, will be ranked to create an alphabetical grade.

4. Accommodations and Accessibility

Both Simon and the University of Rochester respect and welcome students of all backgrounds and abilities. In the event you encounter any barriers to full participation in this course due to the impact of a disability, please contact both your instructor and the Office of Disability Resources as soon as possible. The access coordinators in the Office of Disability Resources will meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations. You can reach the Office of Disability Resources at (585)276-5075 or at disability@rochester.edu . More information can be found at https://www.rochester.edu/college/disability/ .

5. Credit-Hour Policy Adherence

This course follows the Simon credit-hour policy for 2.5-credit courses. The course meets three times per week for 2 hours each meeting. In addition to these 6 hours of synchronous class sessions per week, students are required to work on homework assignments and complete other asynchronous learning activities (such as exercises that are in part finished at home). For each hour in class, students should expect twice the time outside of the class on supplemental work, including reviewing the class material, completing in-class exercises, and completing the homework assignments.

6. Academic Integrity

Simon's Code of Academic Integrity (see the section Academic Integrity Policy in the Simon School Student Handbook) states: "*Every Simon student is expected to be completely honest in all academic matters. Simon students will not in any way misrepresent their academic work or attempt to advance their academic position through fraudulent or unauthorized means. No Simon student will be involved knowingly, or unknowingly yet passively within a team, with another student's violation of this standard of honest behavior.*"

In addition to refraining from obvious forms of cheating and plagiarism:

- On assignments, do not copy or paraphrase work from each other, from students who have taken the class previously, from materials of mine distributed in a previous class, or from outside sources. Any written work should be entirely your own (or your team's, as applicable).
- Exams or assignments that include an Academic Integrity/Honesty Pledge must have the pledge signed. Submissions without the pledge signed will receive a score of zero.

- Do not obtain advice, notes, solutions, or other material from students who took the class previously in ways that would give you an unfair advantage or would undermine the learning experience for you and the class (such as, notes from past case discussions). Similarly, do not use others' case analyses posted on-line.
- Use quotation marks when quoting any text directly. Changing a few words of a sentence or longer section does not make the work your own. Independently written texts rarely have even five consecutive words in common.
- Students may not audio or video record class lectures or other classroom or laboratory activities without the instructor's permission.
- Students may not publish, distribute, or sell—electronically or otherwise—any course materials that the instructor has developed in any course of instruction in the University (e.g., presentation slides, lecture aids, video or audio recordings of lectures, and exams) without the explicit permission of the instructor.

Most forms of disallowed shortcuts are easy to detect and will be referred to the school's Academic Integrity Committee. To help prevent other students from violating academic integrity, do not pass on notes or give advice on assignments to any students who are taking the course in a later term or are taking it at the same time in a different section. Please refer to the Student Handbook for any questions regarding the Code of Academic Integrity.

If a situation in your professional or personal life prevents you from finishing assigned work in a timely manner, please contact me before the deadline to discuss how to proceed. You should also contact your OSE advisors, if appropriate. Do not violate the Academic Integrity Code in an attempt to manage a difficult situation.

Tentative Course Schedule

Part I: Data structure

• Week 1 (July 25, 26, 28)

- introduction and overview
- vectors of numeric data
- data visualization basics
- asynchronous session (due July 26): installing R, setting up the interface, installing packages, calling packages, using editors [optional but highly recommended]
- assignment 1 (due July 31)

• Week 2 (August 1, 2, 4)

- data structure: vectors and arrays
- data frames
- character data
- in-class / take-home exercise: billboard data
- assignment 2 (due August 7)

Part II: Programming

• Week 3 (August 8, 9, 11)

- flow control structures
- functions
- assignment 3 (due August 14)

• Week 4 (August 15, 16, 19)

- "apply" class functions
- in class / take-home exercise: optimization
- advanced topics
- assignment 4 (group assignment, due August 21)

• Week 5 (August 23)

- review