CityUniversity of Seattle

Syllabus

SCHOOL OF BUSINESS AND MANAGEMENT

BUS 440: Introduction to Data Science

5 Credits
Effective: Summer 2019/2020

Access to the Internet is required.
All written assignments must be in Microsoft-Word-compatible formats.
See the library's APA Style Guide tutorial for a list of resources that can help you use APA style.

FACULTY

Faculty Name: FACULTY NAME

Contact Information: CONTACT INFORMATION

[INSTRUCTOR MAY INSERT PERSONAL MESSAGE IF DESIRED]

COURSE DESCRIPTION

The Dot-Com boom has enabled a fast transition into digitized business processes and customer relations. This transition has given organizations access to essential data to drive innovation and to adapt to rapid market changes. Organizations can utilize data science for collecting and analyzing large volumes of data generated across multiple sources to optimize business processes, improve productivity, and provide more value to their customers. A key challenge for the adoption of data science is that most resources are not easily accessible to business professionals who are a primary beneficiary of this data revolution. In this course, students pursue a "business-friendly" approach to data science. This course introduces key concepts of data science including data management, building and testing models, visualization, and real-world setup.

COURSE RESOURCES

Required and recommended resources to complete coursework and assignments are found on the course Reading List. The reading list can be found under Course Information in Blackboard as well as from the library homepage.

Note: Required resources that must be purchased by the student are tagged "Purchase from a vendor of your choosing." Required resources with a direct link, "Available through CityU Library", are available at no cost to students.

Students in Canada will see required resources they need to purchase tagged "Purchase from the Canadian Bookstore." Students outside the U.S. and Canada should contact their advisor or textbook coordinator for additional information.

CITYU LEARNING GOALS

This course supports the following City University learning goals:

- Professional competency and professional identity

COURSE OUTCOMES

In this course, learners:

- Differentiate between supervised and unsupervised machine learning methods and apply both methods to solve business problems.
- Build regression models, clusters, and classifiers using R.
- Explain the role of the data scientist in the business analytics process.
- Apply descriptive and inferential statistical tools to enhance strategic decision making.

OVERVIEW OF COURSE GRADING

The grades earned for the course will be derived using City University of Seattle's decimal grading system, based on the following:

Overview of Required Assignments	*% of Final Grade*
Analysis of Data Science Jobs	15%
Analysis Paper on Machine Learning	15%
Weekly Analysis Exercises and Discussions	50%
Final Analysis Project	20%
TOTAL	**100%**

SPECIFICS OF COURSE ASSIGNMENTS

The instructor will provide grading rubrics that will provide more detail as to how this assignment will be graded.

Analysis of Data Science Jobs

Students will conduct an analysis of relevant literature and a selection of job descriptions to prepare a 1-2 page report that describes the role of the data scientist and how this position supports a business in implementing a data-driven strategy.

Components	*% of Grade*
Summary of Jobs for Data Scientist and Data Analysts	50%
Critical Analysis	30%
Evidence and Support	20%
TOTAL	**100%**

Analysis Paper on Machine Learning

Students will conduct research to find information about both supervised and unsupervised machine learning methods. Students will then contrast these two different classes of methods, identify various tools in each category, and explain how those tools can be applied to solve business problems. The paper will be 5-7 pages; APA writing conventions should be followed with a minimum of three (3) sources referenced and cited.

Components	*% of Grade*
Application of Machine Learning (Machine Learning)	50%
Supervised and Unsupervised methods	30%
Style and Mechanics	10%
APA	10%
TOTAL	**100%**

Weekly Scripting and Analysis Exercises

Students will complete a series of R scripting exercises that allow them to apply common descriptive and inferential statistical methods to business problems and challenges. Students will complete scripts to load and visualize data, calculate measures of central tendency, build regression and classification models, and cluster large data sets.

Components	***% of Grade***
R scripting	50%
Statistical Tools	50%
TOTAL	**100%**

Final Analysis Project

Students will be provided with a scenario and a data set. They will analyze the data set to discover useful and actionable information from it. Both descriptive and inferential methods must be applied. Students will be expected to use their knowledge of R and different machine learning methods to complete the analysis.

Components	***% of Grade***
R scripting	50%
Statistical Tools	50%
TOTAL	**100%**

COURSE POLICIES

Late Assignments

A critical aspect of management is to meet predefined deadlines. Therefore, all assignments are expected to be submitted when due. No late assignments are accepted. Life-situations do occur. When an issue arises coordinate with the instructor PRIOR TO the assignment's due date and the due date may be adjusted. It is in the best interest of the student to ensure that all assignments are submitted on time.

Participation

Class participation will be evaluated during class. Participation includes being prepared for class discussions and contributing meaningful content when appropriate. It also includes individual effort contributed to team projects.

Professional Writing

Assignments require error-free writing that uses standard English conventions and logical flow of organization to address topics clearly, completely, and concisely. CityU requires the use of APA style.

UNIVERSITY POLICIES

You are responsible for understanding and adhering to all of City University of Seattle's academic policies. The most current versions of these policies can be found in the University Catalog that is linked from the CityU Web site.

Non-Discrimination & Prohibition of Sexual Misconduct

City University of Seattle adheres to all federal, state, and local civil rights laws prohibiting discrimination in employment and education. The University is committed to ensuring that the education environment is bounded by standards of mutual respect and safety and is free from discriminatory practices.

In the U.S., the University is required by Title IX of the Education Amendments of 1972 to ensure that all of its education programs and activities do not discriminate on the basis of sex/gender. Sex include sex, sex stereotypes, gender identity, gender expression, sexual orientation, and pregnancy or parenting status. Sexual harassment, sexual assault, dating and domestic violence, and stalking are forms of sex discrimination, which are prohibited under Title IX and by City University of Seattle policy. City University of Seattle also prohibits retaliation against any person opposing discrimination or participating in any discrimination investigation or complaint process internal or external to the institution. Questions regarding Title IX, including its application and/or concerns about noncompliance, should be directed to the Title IX Coordinator. For a complete copy of the policy or for more information, visit https://my.cityu.edu/titleix or contact the Title IX Coordinator.

In Canada, in compliance with the British Columbia Human Rights Code, the Alberta Human Rights Act, WorksafeBC, and the Workers' Compensation Board of Alberta, the University believes that its environment should at all times be supportive and respectful of the dignity and self-esteem of individuals. Discrimination, harassment and bullying conduct, whether through person to person behaviour or via electronic communications such as email or social media is not acceptable and will not be tolerated. As an educational institution, it is our responsibility to cultivate an environment of excellence, equity, mutual respect and to recognize the value and potential of every individual. The University will take all necessary steps to meet or exceed the requirements of the law to prevent discrimination, harassment and bullying. The Respectful Workplace Policy for the prevention of discrimination, harassment and bullying policy and procedure can be found at https://www.cityu.edu/discover-cityu/about-cityu/ under the Policies section or at https://www.cityuniversity.ca/about/.

Religious Accommodations

City University of Seattle has a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The University's policy, including more information about how to request an accommodation, is available in the University Catalog and on the my.cityu.edu student portal. Accommodations must be requested by the 20% mark of this course (e.g. day 14 of a ten-week course, day 7 of a 5-week course) using the Religious Accommodations Request Form found on the student dashboard in the my.cityu.edu student portal.

Academic Integrity

Academic integrity in students requires the pursuit of scholarly activity that is free from fraud, deception and unauthorized collaboration with other individuals. Students are responsible for understanding CityU's policy on academic integrity and adhering to its standards in meeting all course requirements. A complete copy of this policy can be found in the University Catalog in the section titled Academic Integrity Policy under Student Rights & Responsibilities.

Attendance

Students taking courses in any format at the University are expected to be diligent in their studies and to attend class regularly. Regular class attendance is important in achieving learning outcomes in the course and may be a valid consideration in determining the final grade. For classes where a physical presence is required, a student has attended if they are present at any time during the class session. For online classes, a student has attended if they have posted or submitted an assignment. A complete copy of this policy can be found in the University Catalog in the section titled Attendance under Student Rights & Responsibilities.

Final Assignments Due Date

Final assignments for each class at CityU must be due on or before the final date of the course as indicated in the university's course information system. Due dates that extend beyond the final date of the course may negatively impact tuition funding for students.

SUPPORT SERVICES

Disability Services Accommodations Statement

Students with documented disability who wish to request academic accommodations are encouraged to contact Disability Support Services to discuss accommodation requests and eligibility requirements. Please contact Disability Support Services at disability@cityu.edu or 206.2369.4752 or visit the Disability Support Services page in the my.cityu.edu portal. Confidentiality will be observed in all inquiries. Once approved, information about academic accommodations will be shared with your course instructors.

Library Services

CityU librarians are available to help students find the resources and information they need to succeed in this course. Contact a CityU librarian through the Ask a Librarian service, or access library resources and services online, 24 hours a day, seven days a week.

Smarthinking Tutoring

CityU students have 24/7 access to free online tutoring offered through Smarthinking, including writing support, from certified tutors. Contact CityU's Student Support Center at mycityusupport@cityu.edu to request a username and password.