



**SAN FRANCISCO
STATE UNIVERSITY**

Class Syllabus DS311, Fall 2023

Course Information:

Course Title: Technologies in Data Analytics

Semester: Fall 2023

Number of Units: 3

Course ID: DS311-01

Schedule Number: 07770

Class Location: Online

Class Lectures: Monday, 6:30 – 9:15pm

Final Exam Date:

Instructor's Information

Instructor: Norman Lo

Office: Online Zoom Meeting

Email: lokman@mail.sfsu.edu

Office Hours: Wednesday, 12:00 – 1:00pm or by appointment

Recommended Preparation: DS312 or DS604, or consent of instructor

Course Overview and Objectives:

Data processing and visual analytics are the emerging field concerned with extracting, cleaning, analyzing, and presenting complex high dimensional data. This course will introduce students to the field by covering state-of-the-art data processing and visualization techniques with the most updated technologies from the industry. It will emphasize practical challenges involving complex real-world data and include a hands-on group project that applies different analytic tools. Students will use SQL, Tableau, R, and Python to uncover insights, communicate critical findings, and create data-driven solutions.

Course Material:

All course material can be found in the following GitHub repository.

GitHub Repository: <https://github.com/San-Francisco-State-University-DS/DS311-Technologies-in-Data-Analytic-FA23>

Grading Criteria:

Assignments – 40%

Lab Exercise – 20%

Group Project – 30%

Discussion Participation – 10%

Letter Grades:

92 or above	A	73 - < 76	C+
88 - < 92	A-	68 - < 73	C
84 - < 88	B+	64 - < 68	C-
80 - < 84	B	55 - < 64	D
76 - < 80	B-	Below 55	F

Assignments:

Several assignments throughout the semester. Each assignment is designed to demonstrate the mastery of the topic covered in each section. The questions are mostly related to the real-world business problem and solving them with a specific tool.

Lab Exercise:

Students are provided with several lab exercise to practice using different tools in this course. The purpose of the lab exercise is to motivate students to practice using the tools for analyzing different business problems.

Group Project:

Students are provided with a data set to solve a list of business problems using any analytic tools covered in the semester. The final project report is due by the end of the semester.

Withdrawal and Drop Policy:

Students are responsible for officially withdrawing from the course if they choose to; do not assume that I will process a drop when you stop doing your coursework.

If you choose to withdraw from the course and do not complete the formal withdrawal procedures, you will receive "F". It is students' responsibility to keep up with all college deadlines.

Makeup Policy for Tests:

Students are only allowed to make-up a test under certain circumstances, in the event of a documented and verifiable excuse provided within 48 hours of the exam. No makeup is given for unexcused and non-documented absences, or failure to notify the instructor within 48 hours of the exam. The student will receive a zero score on the test. For those who are assigned a makeup test, he/she must makeup an excused absence from a test within three business days. The makeup test must be taken at the Economics Department located on first floor in HSS building (HSS143). The makeup test is strictly closed books, closed notes.

SF State College of Business Undergraduate Academic Standards

See the third link of this page: <http://cob.sfsu.edu/intranet>

San Francisco State University College of Business (SF State CoB) regards incidents of academic misconduct as serious matters. The following explains what academic misconduct is and outlines the consequences of academic misconduct.

A. Academic Misconduct

Academic misconduct is defined as follows:

1. Cheating: Any unauthorized attempt to offer or obtain assistance in a formal academic exercise (e.g., an examination or class exercise); assuming another student's identity with intent to provide an advantage for the student; copying, in part or in whole, from another's test or other evaluation instrument; submitting work previously presented in another course, if contrary to the rules of either course.
2. Plagiarism: The unauthorized use (i.e., representing as one's own work) or reproduction or close imitation of original creations (ideas, words, sentences, paragraphs, or parts thereof; or artistic/scholarly works such as computer programs, photographs, or similar works) of another author (person, group, organization, including anonymous authors) without due acknowledgment (accepted standards of citation or reference of the original source of the used or quoted content).

3. Fabrication: The distortion of data, information, or citations in any formal academic exercise or altering grading or grading instructions.
4. Deception: Providing false information to an instructor concerning a formal academic exercise—e.g., giving a false excuse for missing a deadline, falsely claiming to have submitted work, or submitting false information regarding internships.

B. Disciplinary Sanctions

Two major types of sanctions may be imposed for any academic misconduct: Academic and Administrative. Academic sanctions are actions concerned with the coursework and grades which are the jurisdiction of the instructor. Administrative sanctions are related to a student's status on campus and are governed by the Office of Student Conduct (OSC). The imposition of one form of sanction will not rule out the imposition of the other.

1. Academic Sanctions: Upon verification of academic misconduct by personal observation and/or documentation, an instructor reserves the right to take one or more of the following academic actions:

i. Reprimand: A verbal or written notification of unacceptable behavior, violating the student honor code.

Reprimand may be considered for any academic misconduct at the discretion of an instructor.

ii. Modification of Grade: A student may be failed in the evaluation instrument (assignment or exam), may receive a reduced course grade, or may fail the course.

2. Administrative Sanctions: Academic integrity is essential to the educational process. Traditional academic practices require that faculty members address cases of academic dishonesty in the classroom. Executive Order 1078, Article III, K, Cases Involving Academic Dishonesty, insists that, in addition, CSU faculty members report any infractions to a central location so that a student can be held accountable for multiple academic violations and the campus can recognize any patterns of misconduct. Cases of academic dishonesty for both cheating and plagiarism should be reported to their respective department chairs who should then report it to the Associate Dean or designee of the College (e.g., Assistant Dean). The Associate Dean or designee will then instruct the faculty member to complete the Confidential Academic Dishonesty Reporting Form housed within the Faculty Resources section (<http://conduct.sfsu.edu/faculty>) on the OSC website. The form, which goes directly to the OSC, will ask for the following information: names of students, SFSU ID #s, date of incident, class name/number/section, instructor's contact information, type of incident- cheating or plagiarism, etc.

Statement on Services for Students with Disabilities

Americans with Disabilities Act (ADA) Accommodations: The University is committed to providing reasonable academic accommodations to students with disabilities. The Disability Programs and Resources Center provides university academic support services and specialized assistance to students with disabilities. Individuals with physical, perceptual, or learning disabilities as addressed by the Americans with Disabilities Act should contact Services for Students with Disabilities for information regarding accommodations. Please notify your instructor so that reasonable effort can be made to accommodate you. If you expect Accommodation through the Act, you must make a formal request through Disability Programs & Resources Center in SSB 110, Telephone (415) 338-2472, or by e-mail (dprc@sfsu.edu). For more information, please visit the DPRC website at <https://access.sfsu.edu/home>.

A. Disability access

Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The [Disability Programs and Resource Center (DPRC)] is available to facilitate the reasonable accommodations

process. The [DPRC] is located in the [Student Service Building] and can be reached by telephone [(voice/415-338-2472, video phone/415-335-7210) or by email (dprc@sfsu.edu).]

B. Student disclosures of sexual violence.

SF State fosters a campus free of sexual violence including sexual harassment, domestic violence, dating violence, stalking, and/or any form of sex or gender discrimination. If you disclose a personal experience as an SF State student, the course instructor is required to notify the [Title IX Coordinator by completing the report form available at <http://titleix.sfsu.edu>, emailing vpsaem@sfsu.edu or calling 338-2032]. To disclose any such violence confidentially, contact:

[The SAFE Place - (415) 338-2208; http://www.sfsu.edu/~safe_plc/]

[Counseling and Psychological Services Center - (415) 338-2208; <http://psyservs.sfsu.edu/>]

For more information on your rights and available resources: [<http://titleix.sfsu.edu>]

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SF State Withdrawal from Courses Policy

The CoB will observe the SF State Withdrawal from Courses policy F15-196:

<http://senate.sfsu.edu/policy/withdrawal-courses>

College of Business Center for Career Services and Professional Development

Please see this link: <http://cob.sfsu.edu/resources/career-services> or contact Heidi Yu, Director, at heidiyu@sfsu.edu, cobcareer@sfsu.edu, and (415) 338-2509 or stop by BUS 137.

Syllabus is Subject to Change:

This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.

Tentative Reading List and Course Outline:

Week 1	Introduction to Bash and Git
Week 2-3	Introduction to Python
Week 4	Basic SQL Queries
Week 5-6	Introduction to R
Week 7-8	Introduction to Tableau
Week 9-10	Exploratory Data Analysis
Week 11	Storytelling and Business Presentation
Week 12	Group Project Introduction
Week 13	Group Project (Answering Basic Business Questions)
Week 14	Group Project (Investigate In-Depth Business Questions)
Week 15	Group Project Presentation
Week 16	Group Project Report Due for Grading

Group Project:

The project is an important part of the learning process. The purpose of which is simple! Review a real-world data set try to answer different business questions with the tools introduced in this course. Each group consists of 2 - 3 students.

Project Deliverables:

1. Data Cleaning (20%): Each group needs to clean the project data set, identify key features for answering the business questions. After cleaning the data, create the descriptive summary table and write at least 500 words to conclude your finding from the table.
2. Exploratory Data Analysis (20%): Each group needs to apply exploratory data analysis (EDA) to seek for the solutions to the business questions. Students can use any tools that they prefer in this stage, however, the group needs to discuss and agree on the final presentation tool (PPT, PDF, Tableau Dashboard, Google slides, etc) for the project.
3. Presentation (20%): Each group is given 15 minutes to present to the class on Zoom. In the presentation, each group member must present their project. The presentation should start with answering the basic business questions provided in the project description. Then focus on the in-depth business project discovered by the group.
4. Final Report (40%): The main body of your report should be word-processed. The first page should be an executive summary. The page limit for the report (main body, technical appendix, graphs) is 6 pages. Each group must submit the report in PDF file with any coding file, workbook, or notebook.

General Policies

1. In order not to disrupt a productive learning environment, the students are obligated to be present in the class before the start of the class. **No late arrivals are accepted in this class.** If a student has a legitimate reason to be late in (not more than) one of the sessions, she/he must notify the instructor 48 hours in advance, and she/he can attend the class late if she/he is granted a permission to enter and attend the class late.
2. Students without sufficient statistical background **MUST** meet the instructor during his office hours and start reviewing the pre-requisites of the course in parallel to studying the course materials.
3. In order to be successful in the course, it is vitally important to spend a significant amount of time on assignments, practice materials, and course materials. The students must understand that failing to study this course continuously and **at least 6 hours a week** will most likely result in failing the course.
4. To complement the learning process, students are encouraged to visit the instructor at his office hours should they feel they need elaboration on any of the topics. To increase the effectiveness of the office hour sessions, students are encouraged to first read the material and start working on the assignments before visiting the instructor.
5. Students with disabilities who need reasonable accommodations are encouraged to contact the instructor. The Disability Programs and Resource Center is available to facilitate reasonable accommodations.
6. All of the subjects discussed in the class are pre-requisites of the subjects that will be discussed later in the class; the students understand that not reviewing previous lecture materials will automatically result in not understanding the new materials. Students shall review and study the summary and the reading list before showing up in the next class.