

4 Units

Day/Time: Tues/Thurs 4:00PM – 5:50PM, Spring 2025

Location: THH-301

Instructor: Bruce Wilcox

Office: GER 203

Office Hours:

Monday: 4:00PM – 4:45PM

Wednesday: 3:00PM – 4:45PM

Contact Info:

Please use Piazza for all course communications

brucewil@usc.edu

Course Producers:

Shilong Ren (lead CP)

Reetvik Chatterjee

Nikita Vivek Kolhe

Anqi Li

Catalog Course Description

Overview of data management and analytical techniques used in corporate environments and their practical implementation using a state-of-the-art Business Intelligence software.

Expanded Course Description

Business Intelligence (BI) combines analytics, data mining, data visualization, and statistical methods to enable large organizations to make improved data-driven decisions by extracting important information from complex enterprise systems. Modern BI platforms bring all the components of a project lifecycle from data preparation through discovery and modeling to assessment, deployment, and governance together in a single, integrated environment that requires minimal to no low-level coding (“low-code/no-code”).

The primary objectives of this course are to provide the student a theoretical overview of the entire lifecycle of a data science initiative in commercial settings and to provide the opportunity to get experience implementing these techniques using advanced Business Intelligence software currently used by large corporate and public sector entities.

Prerequisite(s): None.

Recommended Preparation: It is recommended that students have an undergraduate-level familiarization with statistics. Previously or concurrently taking ISE-529 is strongly recommended and a basic familiarization and comfort with Python will be needed in the second half of the semester.

Learning Objectives and Outcomes

The overall course objective is to learn the latest technologies and methodologies used in large enterprises to perform a broad range of business intelligence and systems analytics activities.

- The latest generation of business intelligence and analytics software is moving towards a cloud-based "no-code/low-code" data and analytics platform. We will be using leading commercial tools including the Tableau data visualization/dashboard development environment a state-of-the-art cloud-based analytics platform.
- Techniques covered will include data preparation and management, data exploration and reporting/dashboarding, advanced analytical modeling (descriptive and predictive), free text analytics, forecasting, and deployment of analytical products in a large enterprise.
- The course will focus developing an advanced understanding of setting model hyperparameters, interpreting and assessing model results, and deploying and managing data and analytics products in an enterprise environment.

Course Notes

All course materials (PowerPoints, assigned readings, etc) will be distributed via Brightspace.

Technological Proficiency and Hardware/Software Required

An advanced BI Analytics software platform will be used. The hardware/software required is a laptop or other personal computer and a browser. Accounts will be established for each student and a basic orientation to the software will be provided in the first session with each platform.

Required Readings and Supplementary Materials

There are no mandatory texts for this class. Required readings and supplementary materials will be assigned for each module and distributed via Brightspace and will include the following:

- Mastering Tableau, Meier and Baldwin, 2021, O'Reilly
- Engineering MLOps, Raj, 2021, Packt Publishing
- Selected journal papers of significance in the field of data science

Grading Breakdown

Assignment	% of Grade
Assignments (approx. 9)	20
Tableau mid-term	20
Tableau project	20
Cloud analytics mid-term	20
Final project	20

Grading Scale

Course final grades will be determined using the following scale:

A	95-100
A-	90-94.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	75-79.9
C	70-74.9
C-	50-69.0
F	Below 50

Borderline averages between two letter grades may be rounded up based on class engagement at the instructor's discretion.

Assignment Submission Policy

- Assignments will be posted on Brightspace and submitted for grading on GradeScope (student instructions will be provided).
- Assignments turned in after the due date will be penalized 10%. Assignments not turned in within 48 hours of the due date will not be accepted.
- If you feel that your submission was not graded correctly, use the GradeScope "Request Regrade" button and type an explanation of why you feel the grade should be changed. I will accept requests for one week after grades published, after which the request regrade function will be disabled.
- The lowest homework grade for the semester will be dropped from the final grade computation.

Course Communications

- All materials will be uploaded to Brightspace.
- Assignments will be submitted through Gradescope.
- We will use Piazza as the primary communications mechanism.
 - Class announcements will be posted there, and we request that any questions you have be posted there so that other students can benefit from your question and responses from the instructor, TAs, and hopefully other students.
 - Students who actively post responses to questions MAY receive extra credit (which could result in an increase by one letter grade in borderline cases)

Course Schedule: Weekly Breakdown

Week	W/E	Topics	Assignments
1	1/17	Module 1: Course Overview and Introduction to Tableau	Tutorials assigned
2	1/24	Module 2: Data Visualization with Tableau	Tutorials due Module 2 HW assigned
3	1/31	Module 3: Calculated Fields	Module 2 HW due Module 3 HW assigned
4	2/7	Module 4: Data Preparation with Tableau	Module 3 HW due Module 4 HW assigned
5	2/14	Module 5: Dashboard Development	Module 4 HW due Tableau project assigned
6	2/21	Module 5: Dashboard Development	
7	2/28	Tableau mid-term: 2/25 Module 6: ML Pipelines and Platforms	Tableau project due
8	3/14	Module 7: Introduction to GCP for Analytics	Module 7 HW assigned
9	3/21	Module 8: AutoML Model Development and Deployment	Module 7 HW due Module 8 HW assigned
10	3/28	Module 9: Custom Model Development and Deployment	Module 8 HW due Module 9 HW assigned
11	4/4	Module 10: Analytics Pipelines	Module 9 HW due Module 10 HW assigned
12	4/11		Module 10 HW due
13	4/18	Cloud analytics mid-term (4/17)	Final project assigned
14	4/25	Module 11: GCP MLOps Functionality	Module 11 HW assigned
15	5/2		Module 11 HW due
		Final project due – 5/8	

Notes:

- The “W/E” column above means “week ending” and the date listed is the Friday of that week and the corresponding row refers to topics and assignments covered on one or both class days of that week.
- This schedule is subject to changes throughout the semester. This syllabus will not be updated, but the latest schedule will always be available on Brightspace.
- The current official due dates for the homework assignments can be found in Gradescope.

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity <http://equity.usc.edu> or to the Department of Public Safety <http://capsnet.usc.edu/departement/departement-public-safety/online-forms/contact-us>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage <http://sarc.usc.edu> describes reporting options and other resources.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 – 24/7 on call
engemannshc.usc.edu/rsvp

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu

Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support

Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

studentaffairs.usc.edu/ssa

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.