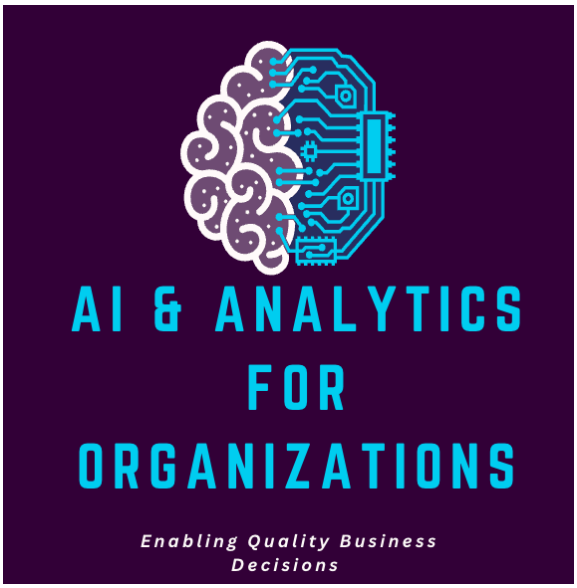
COURSE SYLLABUS



AI and Analytics for Organizations

Credit Hours 3

MUMA College of Business

School of Information Systems and Management

Last Updated: 01/06/2025

Semester: Spring 2025

Instructor: Dr. Nasir M Uddin (nasir1@usf.edu)

Office Hours: Refer to course home page (**There will be a daily virtual help session: 5-6pm**)

E**mail**: Please use your Section Info (CAI3801.001S25) and a Precise Title about the Matter in the subject to communicate. If you do not receive a response within 36 hours, then please send an email again and in the subject line list "**CAI 3801 (Section#) – 2nd request**".

All course communications would be through Canvas Announcement (Check regularly)!

I. Welcome to AI and Analytics for Organizations Class

This course aims to prepare students with the skills required for business decision-making using AI and analytics. This course prepares students with the AI concepts and machine learning analytical methods and the ability to apply the learning on data from business applications. Students will use tools like Excel, Tableau, and Python to apply AI, analytical methods, and data visualization in varying business scenarios, marketing, accounting, finance, operations, supply chain, human resources, and sales. Students will learn data summarization and predictive techniques to make futuristic business decisions. (Request free student license for Tableau -

https://www.tableau.com/students)

II. University Course Description

This course focuses on the use of critical thinking skills and common workplace tools to understand business scenarios, analyze data, and provide results and visualizations that will aid in data-supported business decisions. Descriptive, diagnostic, predictive, prescriptive, and advanced analytics will be covered as well as the use of AI in business analytics. (USF Catalog: https://catalog.usf.edu/)

III. Course Prerequisites

CGS 2100 with a minimum grade of C
QMB 2100 with a minimum grade of C

IV. How to Succeed in this Course (4 P's)

The following are key factors to consider to be successful in this course:

1. **Prepare**: Successful completion of this course will require significant and consistent preparation.
2. **Plan**: All due dates are included in this syllabus and on Canvas, so please review these dates and plan accordingly to ensure that you can commit to the due dates. In most cases, students can work ahead on posted assignments. Please plan to do so if you have other commitments (ex. travel, work, vacation, etc.).
3. **Plug in**: Canvas announcements will be used to communicate with students. Please review your Canvas notifications to ensure that you receive the most up-to-date information for this course.
4. **Participate**: Do not sit back and watch others participate - stay active in the discussions. Additionally, add your own unique perspective to the discussions versus repeating what others read in the cases. Consider injecting your own experiences or other real-world examples to support conclusions and/or questions.

V. Student Learning Outcomes

By the end of this course, successful students will be able to:

1. **Identify the Role of Technology**: Understand the critical role technology plays in organizations and how it supports decision-making processes.
2. **Develop Software Tool Skills**: Gain practical skills in using software tools necessary for conducting comprehensive business analytics.
3. **Apply Critical Thinking**: Develop and apply critical thinking skills in analyzing data and making informed decisions.
4. **Perform Various Types of Analytics**: Conduct descriptive, diagnostic, predictive, and prescriptive analytics effectively.
5. **Data Visualization**: Use data visualization techniques to interpret, summarize, and present data clearly (i.e., data visualization best practices and storytelling techniques).
6. **Ethical and Privacy Considerations**: Evaluate the ethical use of data and address privacy concerns in data analysis.
7. **Formulate Mathematical Models**: Create mathematical models for real-world business problems and generate optimal solutions for implementation.
8. **Generate Insights and Communicate Findings**: Extract insights from data and communicate findings effectively to facilitate better business decisions.

VI. Required Texts, Readings, and Course Materials

Introduction to Business Analytics, 1st Edition
ISBN10: 1265444927 | ISBN13: 9781265444921
By Vernon Richardson and Marcia Watson

***Note**: The Textbook has a companion Connect Platform.*

- Connect platform, uses the ALAs (Adaptive Learning Activities) and will help you prepare for the class.
- Assignments and Labs will be in Connect and Canvas, the Learning Management Software (LMS) for this course.
    - Assessments (quizzes) and Tableau labs for each chapter will be on Connect.
    - May have additional activities either as homework or to do in class as a group on Canvas.
- All students are required to have laptops (fully charged) with them in class to participate in classroom hands-on activities in this course.
- No paper assignments will be accepted.
- Keep track of all assignments. Be detail oriented.
- Complete all of the work on-time.
    - Connect activities CANNOT be submitted late.
- Work ahead as much as possible to avoid the impact of potential technology issues (we all have technology issues at some time!).
- Ask questions, take advantage of our office hours and email.

VII. Grading Scale

Final grades will be calculated according to the following points scale.

Grade Scale	Grading Criteria
A+	>97%
A	93.1 - 97%
A-	90.1 - 93%
B+	87.1 - 90%
B	83.1 - 87%
B-	80.1 - 83%
C+	77.1 - 80%
C	73.1 - 77%
C-	70.1 - 73%

D+	67.1 - 70%
D	63.1 - 67%
D-	60 - 63%
F	Below 60%

VIII. Grade Categories and Weights

Point distributions will be available for the respective Week's Review Activities, Quizz, Lab, and Exercise on Connect and Canvas. There will be points for class participation.

Graded Items	**Percent of Final Grade**	
Review Activities	18%	
Quizzes	12%	
Tableau Labs	18%	
Python/other Lab Assignments	5%	
Class participation/collaboration	12%	
Final Project Python/Tableau (Individual/Team)	25%	
Tableau Dashboard (Individual)	10%	(Data Science Certificate)

Late assignments are strongly discouraged and will be penalized by 5% per day (Canvas only). Connect assignments can't be submitted late. All work must be turned in via Connect/Canvas and according to instructions for the assignment, all files must be uploaded to Canvas in the correct format, **no emailed or linked assignments (e.g., to shared drives) will be accepted**. **If you submit a link to the video assignments, then they must be accessible**. If they aren't accessible, then your grade will be 0. For **Tableau Lab assignments, all files should be in .twbx** (**no screen shot or pdf file**)!

IX. Grade Dissemination

All grades for this course will be available at any time using "Grades" in Canvas. Students will be alerted via Canvas notifications when grades are released for manually graded assignments (ex. discussion posts, projects, etc.).
Assignment feedback is given via the assignment rubric and/or via annotations within Canvas. All feedback provides insights about why points were deducted, all students are expected to review this detailed feedback thoroughly. Points will not be deducted without an explanation of why. Students must contact the instructor via Canvas email with questions, questions posed in Canvas comments for the assignment may not be visible to the instructor after the assignment is graded.

X. Course Schedule

Note: The below Course schedule is tentative and may be subject to change. However, any and all such changes will be announced through Canvas or in class.

Class Schedule and Assignments

Class Week	Topic	Items Due (Every Sunday 11:59 PM)
Week 1	**Orientation and Review** ● Course overview, syllabus, and expectations ● Introduction to AI and Analytics in Business. ● Introduction to Python for AI and Data Analytics ● Introduction to Tableau for Data Visualizations **Hands-On Lab**: ● Python for data manipulation using Jupyter Notebook on Colab. ● Tableau for Data Storytelling. **Interactive Activity/Case Study (optional)**: Case study: Transforming Data into Business Value through Analytics and AI	**Connect**: 1. Connect Orientation 2. Basic Math Review 3. Basic Statistics Review **Canvas**: 4. 1st day attendance Assignment (complete the survey form on Canvas) **Connect:** 1. Chapter 1 Review Activities 2. Chapter 1 Quiz 3. Tableau Ch1 Lab Pre-course survey
Week 2	**Information Systems and Business Analytics in Decision Making** ● Role of Information Systems in Business ● Data Sources and Data Collection ● Ethical Use of Data ● Critical Thinking in Analytics ● Introduction to Big Data **Hands-On Lab**: ● Data Collection Techniques ● Load, Clean and Explore Data ● Exploring Data Privacy Scenarios (using resources from Data Privacy Lab at Harvard). **Optional Interactive Activity/Case Study (optional)**: ● **Case Study**: Tableau - Big Data: What It Is and Why It Matters	**Connect:** 1. Chapter 2 Review Activities 2. Chapter 2 Quiz 3. Chapter 2 Lab (Tableau)

Week 3	**Data Preparation / Cleaning** • Missing Values • Duplicates • Outliers • Data Type Mismatch • Unrealistic Values • Statistical Summary **Hands-On Lab**: • Data Cleaning and Summary Statistics	**Connect:** 1. Chapter 3 Review Activities 2. Chapter 3 Quiz 3. Chapter 3 Lab (Tableau) **Canvas:** 4. Python Lab Assignment 1
Week 4	**Exploratory Business Analytics** **Descriptive and Diagnostic Analytics** • Descriptive and diagnostic analytics methods. • Tools and techniques for summarizing and diagnosing data. **Hands-On Lab**: • Using Python and Tableau for descriptive and diagnostic analytics. **Interactive Activity/Case Study (optional)**: • Case study: Business Intelligence - A Complete Review	**Connect:** 1. Chapter 4 Review Activities 2. Chapter 4 Quiz 3. Chapter 4 Lab (Excel)
Week 5	**Predictive and Prescriptive Analytics** • Predictive analytics and its business applications. • Introduction to machine learning for prediction. • Prescriptive analytics and its business applications. **Hands-On Lab**: • Diagnostics (Creating Drill-Down) and Predictive Analytics using Tableau. **Interactive Activity/Case Study** (Optional): • Case Study: Hospital Readmission Prediction	**Connect:** 1. Chapter 5 Review Activities 2. Chapter 5 Quiz 3. Chapter 5 Lab (Tableau) **Canvas:** 4. Python Lab Assignment 2

	Data - Prediction Case Study	
Week 6 **(2/25)**	**Team Introduction - Project Kick-off (No Class)**	**Canvas: Meeting Minutes**
Week 7	**Data Storytelling** ● Creating Impactful Dashboards ● Actionable Insights for Business Decisions. **Hands-On Lab**: ● Interactive Charts and Dashboards - Tableau.	**Connect:** 1. Chapter 6 Review Activities 2. Chapter 6 Quiz 3. Chapter 6 Lab (Tableau)
Week 8	**Predictive and Prescriptive Analytics - Marketing** ● Marketing applications. ● Customer Segmentation - Clustering! **Hands-On Lab**: ● Predictive Analytics and What-If Scenario in Marketing (Tableau). **Interactive Activity/Case Study**: ● Case study: Netflix - Recommendation - An optional detail case study	**Connect:** 1. Chapter 7 Review Activities 2. Chapter 7 Quiz 3. Chapter 7 Lab (Tableau) **Canvas:** 4. Final Project Checkpoint 1 (Completion of Data Cleaning and Descriptive Analytics) - Notebook Submission
Week 9	**Predictive and Prescriptive Analytics - Accounting/Finance** ● Accounting applications. **Hands-On Lab**: ● Trend Forecasting and Scenario Planning	**Connect:** 1. Chapter 8 Review Activities 2. Chapter 8 Quiz 3. Chapter 8 Lab (Tableau)
Week 10	**Predictive and Prescriptive Analytics - Accounting/Finance** ● Finance applications.	**Connect:** 1. Chapter 9 Review Activities 2. Chapter 9 Quiz 3. Chapter 9 Lab (Tableau)

	Hands-On Lab: ● Trend Forecasting and Scenario Planning in Finance. **Interactive Activity/Case Study (Optional)**: ● Case study: Predictive Analytics - Financial Services	**Canvas:** 4. Final Project Checkpoint 2 (Diagnostics and Predictive Analytics Stories) - Tableau Workbook (TWBX file) Submission
Week 11	**Predictive and Prescriptive Analytics - Operations** ● Operations applications. **Hands-On Lab**: ● Predictive models - Operation. ● Reporting Operations (Tableau). **Interactive Activity/Case Study (Optional)**: ● Case study: How Walmart Automated Supplier Negotiations	**Connect:** 1. Chapter 10 Review Activities 2. Chapter 10 Quiz 3. Chapter 10 Lab (Tableau)
Week 12	**Advanced Business Analytics - NLP** ● Introduction to NLP ● Applications in HR and Operations **Hands-On Lab**: ● NLP Visualization (Tableau). **Interactive Activity/Case Study**: ● Case study: Microsoft - Using NLP to Improve Customer Service	**Connect:** 1. Chapter 11 Review Activities 2. Chapter 11 Quiz 3. Chapter 11 Lab (Tableau)
Week 13	**Introduction to Generative AI for Business** ● Introduction to Generative AI ● Business applications of Generative AI. **Interactive Activity/Case Study**: ● Case study: OpenAI - Applications of GPT-3 in	**Canvas:** 1. Quiz 2. Project Checkpoint 3 (Prescriptive Analytics and Storytelling Dashboard) - Tableau Workbook Submission (TWBX file)

	Business	
Week 14	**Advanced Visualizations in Tableau - Effective Storytelling to Business (Leverage AI)** **Interactive Lab in Tableau**	**Preparation for Final Project Submission**
Week 15	**Final Business Analytics Project Submission**	**Canvas:** 1. Project Report 2. Project Work Docs (Colab Notebook and Tableau Workbook) 3. Recorded Project Presentation Video Link
Week 16	**Citizen Data Science Certificate Tableau Dashboard Submission**	**Canvas:** 1. Individual Tableau Workbook (TWBX file) 2. Individual Tableau Dashboard Presentation Video Link

XI. Standard University Policies

Policies about disability access, religious observances, academic grievances, academic integrity and misconduct, academic continuity, food insecurity, and sexual harassment are governed by a central set of policies that apply to all classes at USF. These may be accessed at https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx

XII. Course Policies

The following outlines the general policies for the major assessments in this course. Specific expectations will be posted in the instructions for each assignment on Canvas.

Review Activities / Tutorials / Labs:

The core part of the course is to be familiar with the AI and data analytics techniques by using the tools - Python and Tableau. It is critical to review the activities / tutorials and complete the labs in a hands-on manner to maximize your applied learning.

Case Assignments:

Cases are used as an additional teaching tool in this course because they provide insights into complex business topics using real-world scenarios faced by business leaders. The cases are optional in this course - focus on applications related to AI and Data Analytics.

Since this course is designed to promote analytical thinking and to improve communication / data

storytelling skills (see learning objectives) through lab and project assignments, the use of generative AI tools (e.g., ChatGPT, Bard, Bing, etc.) is prohibited for written part of the assignments in this course (i.e., observed patterns/insights from the data).

Projects:
A major course deliverable in this course is **one Final Project and one Tableau Dashboard** for Citizen Data Science Certificate that give students an opportunity to demonstrate their learnings from the course. All project assignments must be submitted through Canvas as a Word document/PDF document, or Video file (based on instructions) by the assigned due date and time. If you submit a link to a video file, then it must be accessible at the time of grading, otherwise, you will receive a score of 0. Students are encouraged to test accessibility before they submit links to videos hosted externally, e.g., YouTube, SharePoint, Vimeo.

LATE WORK POLICY: If a PROJECT is due on Sunday and is submitted three days after the due date , it will lose 5% each day late (15%), before it's even graded. **Connect activities cannot be accepted late**.

All written project submissions will be analyzed using Turnitin, which is a plagiarism detection tool (see **Turnitin section below)**.

Rewrite Policy: Rewrites are not available in this course, instead, students are expected to use the generous feedback supplied for each assignment to continue to improve since most assignments have multiple grading opportunities. Additionally, rewrites are not fair to the students who completed the assignment, using the same guidelines, correctly.

Make-up Assignments Policy: Makeup assignment opportunities will be given only for **emergencies** within one week of the original due date. Students must discuss any reason for missing an assignment due date with the instructor in **advance** of the due date unless the circumstances make such advance notice impossible. Written documentation must be provided to support any reason for missing assignment. There are only 6 reasons why a student will be given a makeup assignment opportunity:

1. **Medical purpose** - Students must produce a doctor's note stating when and why he/she was unable to meet the due date.
2. **Death in the immediate family**: Students must provide evidence that he/she was in attendance (or in transit to/from) a funeral on the assignment due date.
3. **Major religious holidays:** Students must notify the instructor of the conflict within the first 2 weeks of class.
4. **Varsity athletic events:** a member of a USF athletic team may arrange for a makeup due date if a regularly scheduled League contest or post-season play falls on an assignment due date. A note from the coach will be required to validate the student's absence.
5. **Jury duty:** Students must provide evidence, i.e., a letter from the court, that he/she will be involved in jury duty.
6. **Military call up:** the appropriate commanding officer must submit a letter indicating the student is required to report for duty.

The instructor will decide on the validity of the reason for missing a due date.

Medical Excuses:
Students should not attend class if they are ill, particularly if they have fever and/or gastrointestinal symptoms and/or respiratory symptoms such as sneezing, runny nose, sore throat or coughing. Students experiencing any of these symptoms should immediately contact the Student Health Services (813-974-2331) for appropriate medical guidance and to obtain a verification of care **letter.** Students

may turn to other health providers as well. To be approved for missed classes, late assignments or missed examinations a verification of care letter must be presented by the student to the faculty member upon return to class.

Essay Commentary Policy:
Commentary on written will be delivered in written format using the Feedback feature of Canvas and any applicable rubric. Please use the View Feedback feature of Canvas to see annotations from the instructor on written assignments.

Final Examinations Policy: All final exams are to be scheduled per the University's final examination policy.

Grades of "Incomplete": An Incomplete grade ("I") is exceptional and granted at the instructor's discretion only when students are unable to complete course requirements due to illness or other circumstances beyond their control. The course instructor and student must complete and sign the "I" Grade Contract Form that describes the work to be completed, the date it is due, and the grade the student would earn factoring in a zero for all incomplete assignments. The due date can be negotiated and extended by student/instructor if it does not exceed two semesters for undergraduate courses and one semester for graduate courses from the original date grades were due for that course. An "I" grade not cleared within the two semesters for undergraduate courses and one semester for graduate courses (including summer semester) will revert to the grade noted on the contract. Students are expected to communicate with the instructor regarding "I" grades before grades are submitted to the registrar's office (students will be notified via Canvas email of submission date).

XIII. USF Core Syllabus Policies

USF has a set of central policies related to student recording class sessions, academic integrity and grievances, student accessibility services, academic disruption, religious observances, academic continuity, food insecurity, and sexual harassment that **apply to all courses at USF**. Be sure to review these online at: https://www.usf.edu/provost/faculty/core-syllabus-policy-statements.aspx

Note: there is a zero-tolerance policy related to cheating, as defined in the academic integrity policy, in this course. Any student caught cheating in this course will be referred to the college and to the University, according to the procedures outlined.

XIV. Course Policies: Technology and Media

Minimum Requirements:
To take courses online at USF, students will need to be able to demonstrate proficiency at basic computer skills, maintain reliable internet access, and meet the computer system requirements listed here: http://www.usf.edu/innovative-education/resources/student-services/technical requirements.aspx

Email:
Canvas email is the best way to get in touch with the instructor and every attempt will be made to respond to emails within 24 hours, 7 days per week. If you do not receive a response within 48 hours, then please send an email again and in the subject line list "CAI 3801 (Section#) – 2nd request". If you emailed me but did not receive a response, then double-check to see if you contacted me via Canvas email before reaching out again.

Please only use the email functionality within Canvas as the primary mode to contact the instructor because it provides insights into the student's course section automatically. Due to confidentiality issues, grades will not be released via email or telephone, all grades will be available in Canvas.

Canvas:

This course will be offered via USF's learning management system (LMS), Canvas and the Digital platform "Connect" by the Textbook publisher. If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas/Connect, please view the following videos or consult the Canvas/Connect help guides. You may also contact USF's IT department at (813) 974-1222 or help@usf.edu.

Copyrights:
Materials in this course are protected by United States copyright law [Title 17, U.S. Code]. Materials are presented in an educational context for personal use and study and should not be shared, distributed, or sold in print—or digitally—outside the course without permission. Students in this class are not authorized to provide class notes or other class-related materials to any other person or entity, other than sharing them directly with another student taking the class for purposes of studying, without prior written permission from the professor teaching this course.

XV. Course Policies: Student Expectations

Attendance Policy: Students are expected to attend class, in-person to succeed. This applies to any in class participation activity. Any student found to have completed an in-class participation activity remotely will receive a score of 0 for the assignment and the Academic Integrity policy for reporting will be followed.

Course Hero Policy:
The USF Policy on Academic Integrity specifies that students may not use websites that enable cheating, such as by uploading or downloading material for this purpose. This does apply specifically to CourseHero.com – any use of this website (including uploading materials) constitutes a violation of the academic integrity policy.

End of Semester Student Evaluations: All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Turnitin.com: In this course, turnitin.com will be utilized on all written submissions. Turnitin is an automated system which instructors may use to compare each student's assignment quickly and easily with billions of web sites, as well as an enormous database of student papers that grows with each submission.

Accordingly, you will be expected to submit all assignments in an electronic format. After the assignment is processed, as an instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit

http://www.turnitin.com.

The Writing Studio: The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you at any point in the writing process from brainstorming to editing. Appointments are recommended. To make an appointment, visit https://www.usf.edu/undergrad/academic-success-center/writing studio/http://www.lib.usf.edu/writing/, stop by LIB 2nd Floor, or call 813-974-8293.

Health and Wellness:
Your health is a priority at the University of South Florida. We encourage members of our community to look out for each another and to reach out for help if someone is in need. If you or someone you know is in distress, please make a referral at www.usf.edu/sos so that the Student Outreach & Support can contact and provide helpful resources to the student in distress. A 24-hour licensed mental healthcare professional, offered through the counseling center, is available by phone at 813-974-2831, option 3. Please remember that asking for help is a sign of strength. In case of emergency, please dial 9-1-1.

Campus Free Expression Act Disclaimer: It is fundamental to the University of South Florida's mission to support an environment where divergent ideas, theories, and philosophies can be openly exchanged and critically evaluated. Consistent with these principles, this course may involve discussion of ideas that you find uncomfortable, disagreeable, or even offensive.

In the instructional setting, ideas are intended to be presented in an objective manner and not as an endorsement of what you should personally believe. Objective means that the idea(s) presented can be tested by critical peer review and rigorous debate, and that the idea(s) is supported by credible research.

Not all ideas can be supported by objective methods or criteria. Regardless, you may decide that certain ideas are worthy of your personal belief. In this course, however, you may be asked to engage with complex ideas and to demonstrate an understanding of the ideas. Understanding an idea does not mean that you are required to believe it or agree with it.

Important Dates to Remember: For important USF dates, see the Academic Calendar at http://www.usf.edu/registrar/calendars/