BUAN/MIS 6399.001 "AI in Business" – Spring 2026 Course Syllabus

Course Information

Course Title:	AI in Business
Course Number:	BUAN/MIS 6399.001
Term:	Spring, 2026
Class Time:	Fri, 4:00 – 6:45 pm
Class Location:	JSOM 11.206
Class Level:	Graduate
Semester Credit Hours:	3 credits
Instruction Mode:	Face to Face
Activity Type:	Lecture
Target Audience:	Business Analytics and AI, IT Management, MBA, Marketing, Management, Operations Management, Engineering students with an interest in real-world AI business applications.

Professor Contact Information

Instructor:	Ashim Bose, Ph.D.
Office Location:	JSOM 3-424
Office Hours:	Tues 2:00-3:00 pm**,** Thur 2:00-3:00 pm, or by Appointment
Email:	ashim.bose@utdallas.edu
Teaching Assistant:	Arti Thakkar
Pre-Requisites:	None

Course Description:

Provides hands-on exposure to major AI and Generative AI technologies and their applications in business. Covers topics such as Deep Learning, Large Language Models, Prompt Design, Agentic AI, and business aspects of leveraging and deploying AI including governance and ethics. Major AI use-cases in multiple domains such as Sales and Marketing, Healthcare, Supply Chain, Operations Management, Finance, Software Development, Sports and Media, Human Resource Management, etc. are also covered.

Course Objectives:

- Assess the power of AI by evaluating its business impact around productivity, efficiency, automation
- Experience the primary use cases for AI in key domains such as Sales & Marketing, Healthcare, Supply Chain, Manufacturing, Operations Management, Sports & Entertainment, Information Systems and more
- Hands-on experience in the rapidly growing field of Generative AI including ChatGPT and Copilot, and best practices including Prompt Engineering
- Awareness for Responsible AI including ethics, privacy, bias prevention and governance

- Presentation skills which are key to success in business

Hands-on Work:

- Scripted Exercises to implement different types of AI with Python and Gen AI platforms (no prior experience necessary)
- Capstone Project in collaboration with industry to design/build/modify an AI app in a specific domain (with an accompanying business case)
- Sharing of "lessons learned" with rest of class

Textbooks/Learning Platform:

1. Artificial Intelligence: Applied Artificial Intelligence in Business by Leong Chan, Liliya Hogaboam, Renzhi Cao, Springer, ISBN 978-3-031-05739-7, ISBN 978-3-031-05740-3 (eBook)
2. Supplemented with additional reading materials provided thru eLearning
3. You are encouraged to use your favorite AI platform as a learning tool

Technology Platform:

Python and Gen AI platforms will be used for hands-on exercises. No prior experience in these are necessary.

Group Work: Project work will be done in small groups of 3-5 students.

Lecture Outline & Schedule:

Note : *The content and schedule below is subject to change at the discretion of the Professor and will be communicated in class. There will be several guest lectures from industry practitioners as part of the class.*

Week # (Date)	Description	Deliverable
1 (1/23/26)	*Introductions, Syllabus Overview & Class Expectations* *Introduction to AI:* History, Hype Cycles *Overview of specific AI components* (Knowledge Based Systems, Fuzzy Logic, ML, Deep Learning, NLP, Gen AI)	Reading Assigned
2 (1/30/26)	*Discriminative AI (Machine Learning)*: Supervised, Unsupervised, Regression, Decision Trees; Neural Networks, Deep Learning, Reinforcement Learning, Self-Supervised Learning *Intro to Python Libraries* *Google Colab Overview*	Groups formed
3 (2/06/26)	*Stochastic Methods in AI:* Markov Chain Monte Carlo, Genetic Algorithms, Simulated Annealing *Applications* *Relevant Python Libraries*	Exercise 1 assigned
4 (2/13/26)	*Generative AI:* Generative AI Models (GANs, VAEs, Transformers, Diffusion Models), Applications	

	Data needs for your AI: Quality, Quantity, Diversity, Availability, Structured vs Unstructured, Latency, Governance *Google Vertex AI Introduction*	
5 (2/20/26)	*Prompt Design and Engineering:* Different approaches and best practices *Retrieval Augmented Generation (RAG):* Chunking strategies (recursive, semantic, fixed-size) *Gen AI Challenges:* Hallucinations, Deep Fakes, Prompt Injection Attacks *Major AI Software and Hardware Providers:* Open Source, Cloud Providers, Open AI, NVIDIA, Startups	Exercise 1 due; Exercise 2 assigned
6 (2/27/26)	*Agentic AI*: Anatomy, Solution Architecture Patterns *Multi-Agent Systems & Collaboration:* hub & spoke, decentralized, hierarchical *Evaluation, Feedback, Safety:* Judge Methods, Guard Rails, Modeling, Safety-first Design	
7 (3/06/26)	*Deploying, Monitoring, Optimizing:* Serving Agents, Model Compression, Infrastructure, Caching and Observability, Cost Optimization via small models *Business of AI:* Prioritizing Use-Cases, Revenue Streams, Cost Components, Managing Risk, AI Governance *Developing and Presenting a Business Case:* Key elements including ROI, Payback	
8 (3/13/26)	*AI in Sales and Marketing*: Market Segmentation and Targeting, Advertising, Demand Generation, AI Virtual Agent, AI Recommendation Engine, Propensity to Buy, Forecasting, Salesforce Optimization, Sales Training, Pricing, Brand Positioning, Social-Media	Exercise 2 due; Exercise 3 assigned
9 (3/20/26)	*Spring Break:* No Class	
10 (3/27/26)	*AI for Customer Service*; Customer Feedback, Customer Support, Customer Churn, Customer Loyalty, Social Media, Virtual Assistants *AI for Human Resources Management*: Recruitment, Turnover, Scheduling, Employee Engagement, Performance Management, Training	Project Part 1 due
11 (4/03/26)	*AI in Software Dev*: Requirements Engrg, Software Design, Project Management, Code Generation, Bug Detection, Code Refactoring, Code Review, Test Automation, Documentation Generation *AI in Energy*: Smart Grids, Smarts Homes, Smart Devices, Renewables; *AI in Entertainment*: Content Personalization, Targeted Ads, Content Recognition, Creative Assistant; *AI in Sports*: Sports Management, Coaching Assistance, Game Strategy.	
12 (4/10/26)	*AI in Transportation*: Self Driving, Route Planning, Traffic Planning *AI in Manufacturing:* Factory Planning and Scheduling, Process Automation, Digital Twin *AI in Automotive:* Autonomous vehicles, Driving Behavior, Driver Safety	Exercise 3 due; Exercise 4 assigned

	AI in Operations Management: Sales & Operations Planning, Network Planning, Scheduling, Procurement Intelligence	
13 (4/17/26)	*AI in Healthcare*: Robot Assisted Surgery, Workflow Assistance, Image Diagnosis, Virtual Assistants, Fraud Detection, Wearables, Drug Discovery *Finance and Risk Management*: Personalized Finance, Investment Banking, Asset Management, Fraud Detection	
14 (4/24/26)	*AI in Real-Estate:* Demand Generation, Pricing, Predictive Maintenance, Virtual Assistants, NOI Insights, Buy/Sell/Hold Decision Support *Deploying AI:* Infrastructure, Scalability, Data Management, Data Pipelines, Integration, Cost Management, Testing and Validation, Model accuracy, Model management, Model Drift *Jobs in AI:* AI App Specialist, Prompt Engineer, AI Engineer, AI Governance Officer, AI Data Engineer, AI Product Manager, AI Product Analyst	Exercise 4 due
15 (5/01/26)	*AI Ethics*: Responsible AI, Governance, Privacy, Bias Prevention, Socio-Economic impacts *Trends in AI:* Artificial General Intelligence, Neuro-Symbolic AI, Multi-modal AI, Human-AI Collaboration, AI and the Metaverse	
16 (5/08/26)	Final Demo Presentations with Q&A	Project – Part 2 due

Exercises

Note : *The content and schedule for the Exercises below is subject to change at the discretion of the Professor.*

Work for the Exercises is expected to be done individually.

No late submissions will be accepted unless a timely accommodation before the due date has been approved by the instructor. The accommodation request should be made and approved by email.

- Exercise 1: Build and evaluate a Genetic Algorithm based Schedule Optimizing engine in Python – example script will be provided
- Exercise 2: Build a Chatbot leveraging LLM and RAG leveraging publicly available data – example script will be provided
- Exercise 3: Build a recommendation engine for given dataset with Python – example script will be provided
- Exercise 4: Use GenAI to write the Software and Test Scripts for a specific problem, and develop a Critique

Capstone Project Work:

You will be expected to design/build/modify an AI app prototype as part of a class project, in a specific domain, possibly in collaboration with a company. This will be in addition to the hands-on Exercises. You will leverage lessons from the Exercises to work on your AI app.

For your app, you will pick a domain from below, possibly get connected with a relevant company where appropriate, and create the following artifacts:

- Project domain choices:
  - Healthcare
  - Commercial Real-Estate
  - Supply Chain
  - Manufacturing
  - Insurance
  - Financial Services
  - IT Services
  - Management
  - Education
  - Non-profit
  - Or “Bring your own Domain” with instructor approval

- Project Phase 1:
  Pick an industry and use case (from choices provided in class) for your AI app, elaborate on concept including context, scope, business case, requirements, data needs and a proposed solution architecture: ppt submission & class presentation

- Project Phase 2:
  Design/build/modify the proposed AI app while adding to Phase 1 deck above with tech stack, final solution architecture, data sources, lessons learned: demo presentation and final ppt submission

- Project Surveys:
  There will be periodic Project Surveys conducted in class thru eLearning to ascertain each student’s contribution to their project. These surveys will be graded.

- Project Teamwork:
  Working effectively in Teams is a key part of a well-functioning project team and is a skill valued in the workplace. Students are encouraged to resolve their differences among themselves while sharing the project workload in an equitable manner. Finger pointing among the team is not a sign of a well-functioning team. There is a Project Teamwork grade for how well each project team functions and is directly based on the instructor’s observations over the course of the semester.

- Project Presentation with Q&A:

There will be one oral group Project Presentation with Q&A which will be graded for each student. Each student will need to clearly articulate the topics they worked on and will be presenting, with the Q&A focused on those topics.

- Desired Project Behaviors in Sponsor Meetings:
  Project sponsors are investing in your projects to point you in the right direction but also with an expectation that there will be a return on their investment in terms of the useful outputs from your work. Its critical that you meet with them on a regular basis and show up professionally when you do. Most meetings will be online but you need to dress professionally, have your video camera on, and be prepared with topics to discuss, questions to ask, doubts to clarify etc. Its highly recommended that you have an agenda for your meetings. This is all preparation for your next job when such behaviors will be expected.

Grading:

Note : *The grading criteria below is subject to change at the discretion of the Professor and will be communicated in class.*

Item	**Weighting**	**Individual or Group**
Class Participation & Sharing AI news of the week	10%	Individual
Exercises	40%	Individual
Project Phase 1	10%	Group
Project Phase 2	15%	Group
Project Teamwork	5%	Group
Project Surveys	10%	Individual
Project Presentation with Q&A	10%	Individual
Total	**100%**	

Opportunities for Bonus points will be announced during class

Grading Scale

Weighted Score	Letter Equivalent
>= 95.0	A
>= 90.0 and < 95.0	A-
>= 87.0 and < 90.0	B+
>= 83.0 and < 87.0	B
>= 80.0 and < 83.0	B-
>= 77.0 and < 80.0	C+
>= 73.0 and < 77.0	C
>= 73.0	P
Less than 73.0	F

Class Size:
Max of 60 for Spring 2026.

Course & Instructor Policies:
Adherence to instructions will be considered an important part of the grade. The professor's assessment of the grades is final.

Late work is not allowed after the deadline or via email submission. There will be assignment submission links provided on eLearning. There is Zero credit for not adhering to the deadlines. In case of family or medical emergency, which is beyond student's control, a medical report is required including physician's information as soon as possible, preferably before the deadline. In situations where the professor allows an accommodation, professor will assess the situation for penalty of points if there should be any, as many decisions are on a case by case basis. No end of semester accommodations will be provided.

In email communication, please mention the course number in subject line and use UT Dallas email address. Non-UT Dallas email addresses may not get response due to them ending up in spam folders. Apart from that, please provide 3 working days' time to professor and TA to respond before emailing again. Professor and TA will email as soon as possible, however sometimes responses may take up to 3 working days.

It is student's responsibility to check for updates in eLearning. There will be series of updates throughout the semester to provide timely information and/or updates and/or reminders.

Cell phone use is not allowed during class or exam. eLearning will be used for class content. Slides and other materials will be posted after class is held. Avoid personal conversations during lectures.

Maintain academic integrity. Academic dishonesty involves the abuse and misuse of information or people to gain an undeserved academic advantage or evaluation. Common forms include:

- Cheating – using deception in the taking of tests or the preparation of written work, using unauthorized materials, copying another person's work with or without consent, or assisting another in such activities.
- Lying – falsifying, fabricating, or forging information in either written, spoken, or video presentations.
- Plagiarism – using the published writings, data, interpretations, or ideas of another without proper documentation. Plagiarism includes copying and pasting material from the internet into assignments without properly citing the source of the material.

Episodes of academic dishonesty are reported to the Vice President for Academic Affairs. The potential penalty for academic dishonesty includes a failing grade on a particular assignment, a failing grade for the entire course, or charges against the student with the appropriate disciplinary body.

Students with Disabilities
It is the policy and practice at UT Dallas to make reasonable accommodation for students with properly documented disabilities. However, written notification from the Accessibility Resource

Center (ARC) is required. If you are eligible to receive accommodation and would like to request it for this course, please discuss it with me during office hours and allow for one week's advance notice. Students with any questions about their eligibility for receiving accommodation should contact the OSA office first.

Class Materials

The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course; however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class or uploaded to other online environments except to implement an approved ARC accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Attendance

Regular and punctual physical class attendance is expected (and graded). Students who fail to attend class regularly are inviting scholastic difficulty. Remote/virtual/online attendance is not counted or considered as the instruction mode is face-to-face.

Class Participation

Regular class participation is expected. This includes engaging in class Q&A, discussions, lessons learned in Projects and Exercises. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures. Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student AccessAbility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students.

Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.