Course Syllabus
MIS 7720 – Business Artificial Intelligence
Spring semester, 2021
3.0 Credit Hours

Instructor Information
Name: Ali M Adeli, Ph.D.
Email: amadeli@memphis.edu
Office: FCBE #321
Office Hours: TW by appointment all day

Course Information
Meeting Times: Tue 7:10 – 10:10 PM
Meeting Location: online
Meeting Dates: Jan 19 – April 27, 2021

Course Overview
This course introduces you to the fundamentals of Artificial Intelligence (AI) and its various business applications; how AI impacts businesses and jobs, why to invest in AI, and the challenges and opportunities it provides.

Pre-Requisites/Co-Requisites
There are no formal pre-requisites for enrolling in this course. This course does not require programming experience but it could be helpful. High school level math is expected.

Course Objectives
By successfully completing this course, you should be able to:

• Understand basic AI techniques, their pros and cons, and possible applications.
• Identify possible AI solutions for business problems.
• Understand the challenges and opportunities of adopting AI solutions for business applications.
• Formulate business problems as AI problems to effectively collaborate with AI experts and AI technology providers.
• Understand the potential impacts of AI on businesses and jobs.

Required Texts (and Related Materials)
All reading materials for this course will be available on elearn.
This course requires permanent and unrestricted access to a computer. We will use Google Colab for this course. Colaboratory is a free Jupyter notebook environment that requires no setup and runs entirely on the cloud (https://colab.research.google.com/).

(Optional) Textbooks:
- Artificial Intelligence: A Modern Approach (3rd edition), by Stuart Russell & Peter Norvig
- The Hundred-Page Machine Learning Book, by Andriy Burkov
- Hands-on Machine Learning with Scikit-Learn and TensorFlow, O’Reilly Media

Additional Resources:
- You will be provided free access to Datacamp (see “Overview & Resources” on elearn for details). This is an optional resource if you want to become more familiar with Python (while you are provided ready-to-run code for class activities we do not focus on programming-related skills in this course), data processing/cleaning, and other skills relevant for implementing AI techniques.

Fogelman College: Learning Outcomes for Your Degree
This course is designed to help you to meet the overall learning objectives for the BBA degree offered by the Fogelman College. The Fogelman College has established the following learning goals for all students successfully completing the MSIS/MSBA degree:
- Graduates will be competent in the use of technology.
- Graduates will be effective communicators.
- Graduates will be knowledgeable about threats and opportunities in a global society.
- Graduates will be problem solvers.
Go to https://www.memphis.edu/fcbeassessment/ for more information.

Course Methodology
This course will mainly be online including both asynchronous and synchronous elements.
- Recorded Powerpoint presentations and Video instructions for hands-on activities will be posted on elearn; you should go over this material before online sessions.
- We will hold online Zoom (or Virtual classroom) sessions to elaborate on slides/lectures, go over hands-on activities, discuss group projects, and Q&A.
- Please pay attention to emails and weekly elearn posts where I announce a list of things to do for each upcoming week and day/time of online meetings with Zoom links.
- Quizzes and Activities have to be completed and submitted by the posted due dates on elearn. It is essential to stick with the posted due dates to keep up with the course progress and allow for timely feedback and grading.

While this course is being offered as “Remote/Online”, we can arrange for in-person meetings in small groups as needed throughout the course.
Covid-19 Notice
Please refer to the FCBE covid-19 page for important information and updates.

- Students are welcome to schedule individual zoom meetings throughout the day on Tuesdays and Wednesdays.

Grading and Evaluation Criteria
Over the semester, you will have a variety of opportunities to earn points towards your final (overall) letter grade in this course. This section of the syllabus describes the assessed work you will be doing and how overall (final) letter grades will be computed.

Final Course Grades
Final course grades are earned according to the following table:

<table>
<thead>
<tr>
<th>Point Range</th>
<th>Assigned Grade</th>
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<tbody>
<tr>
<td>Above 90%</td>
<td>A</td>
</tr>
<tr>
<td>Above 80% but below 90%</td>
<td>B</td>
</tr>
<tr>
<td>Above 70% but below 80%</td>
<td>C</td>
</tr>
<tr>
<td>Above 60% but below 70%</td>
<td>D</td>
</tr>
<tr>
<td>Below 60%</td>
<td>F</td>
</tr>
</tbody>
</table>

Your overall grade for the semester is based on how well you perform on a mixture of formal activities including discussions, quizzes and projects. A detailed description of each of the assessed activities can be found after the scoring summary table below.

Summary of Graded Activities
Points earned on the assessed activities will be distributed as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities (10-12)</td>
<td>30%</td>
</tr>
<tr>
<td>Readings</td>
<td>5%</td>
</tr>
<tr>
<td>Project</td>
<td>25%</td>
</tr>
<tr>
<td>Quizzes (x4)</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>

Readings (articles and papers) will be posted on elearn. Students are expected to read them and participate in virtual class discussions.

Project: a group project where you develop a plan for how AI could be used in an organization or business context of your choice. Throughout the course we will become familiar with different tools and techniques in AI; you will propose ideas for the application of these techniques in a business context of your choice. You do not have to implement the proposed AI techniques (not required to deliver working code), however, working prototypes would be a bonus. See elearn for more details.

Quizzes will be posted on elearn and open book, open notes. Quizzes will not be re-opened.

Activities include hands-on exercises using Jupyter notebooks on Google Colab. Details will be posted on elearn.
## Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Activities</th>
</tr>
</thead>
</table>
| Jan 19 | History of AI  
 Applications of AI |  |
| Jan 26 | Intelligent agents  
 Search and planning  
 AI in business: examples from different industries |  |
| Feb 2 | Machine Learning (ML) overview  
 Frameworks and technologies (Implementation) | Getting Started with Colab |
| Feb 9 | ML: Supervised learning – numeric prediction | Predicting Startup Profit |
| Feb 16 | ML: Supervised learning – classification | Click-through on social network ads |
| Feb 23 | ML: Unsupervised learning – Clustering, Association Rule Mining | Segmenting Bank Customers |
| Mar 2 | Artificial Neural Networks (ANN) for supervised learning | Predict Employee Satisfaction  
 Customer Churn Modeling |
| Mar 9 | Reinforcement Learning (Q-learning) | Optimizing business process |
| Mar 16 | Convolutional Neural Networks (CNN) | Image Classification |
| Mar 23 | Recurrent Neural Networks (RNN) and Long short-term memory (LSTM) | Predicting stock prices (temporal data) |
| Mar 30 | Neural Networks for unsupervised learning; Autoencoders (AE), Self-organizing map (SOM) | Outlier Detection in credit card applications |
| Apr 6 | Natural Language Processing: topic modeling | Analyzing Customer reviews using NLP |
| Apr 13 | Natural Language Processing: sentiment analysis, classification, text summarization | Sentiment Analysis  
 Summarizing long stories |
| Apr 20 | Future of AI, and its social and economic implications  
 Review  
 Project presentations |  |
| Apr 27 | Final Exam |  |

*Topics are subject to change*

## Final Exam Schedule

The final exam for this course will be on the last day of class ([Registrar’s academic calendar website](https://www.register.com)).

## Professor’s Expectations

In general, you should assist the instructor and your fellow classmates in creating a positive and supportive environment for learning by staying engaged in the course. You will learn as much from the collective contributions of your classmates as you will from the instructor. As a group,
we will create a positive and collaborative environment and share each other’s views, insights, and analysis of assigned scenarios and readings covered in the course.

**Student's Expectations**
In my role as your instructor, there are certain things you can expect from me including: well organized and engaging learning experience, response to emails within two business days, and feedback on all work submitted within 7-10 business days.

**Course Policies**

**E-mail:**
All students are required to maintain and access their University of Memphis (@memphis.edu) email account. You will receive all official course correspondence at this email account. Any inability to receive incoming mail in a timely fashion (e.g., not regularly checking your email, having a “full mailbox” condition, etc.) is the student’s responsibility. Please include “MIS7720” in the subject in your email correspondence regarding this class.

**Attendance:**
This course is offered as Remote. You are expected to attend online synchronous meetings. It is your responsibility to go over the asynchronous material that will be posted on elearn. Activities and quizzes should be completed during the designated times (posted on elearn). Only students who have received permission in advance will be allowed to make up these activities.

**Adding / Dropping:**
If you have questions about adding or dropping classes, please refer to this page on the Registrar’s website.

**Academic Integrity:**
The University of Memphis has clear codes regarding cheating and classroom misconduct. If interested, you may refer to the Student Handbook section on academic misconduct for a discussion of these codes. Note that using a “Solutions Manual” is considered cheating. Should your professor have evidence that using a “Solutions Manual” has occurred, he/she may take steps as described on the campus’ Office of Student Conduct website. If you have any questions about academic integrity or plagiarism, you are strongly encouraged to review the Fogelman College's Website on Academic Integrity.
Participation:
To be successful in this course as a participant, you must stay active and involved throughout the entire semester. Students are expected participate in all interactive aspects of the course. You should also regularly communicate with the instructor as part of your overall learning experience, check into the course frequently for announcements (usually on the course home page), and actively participate in discussion events (both formal and informal). You should plan on logging into the course at least three times each week.
It is important you actively participate in the classroom discussions as well. Classroom discussions help clarify the readings and lectures and provide additional insights. The quality, not quantity, of the discussion depends heavily on you and your preparation of the assigned problems and suggested readings.

Classroom or Online Behavior:
All participants in the course should be considerate of the other course participants and treat them (as well as their opinions) with respect. The class will operate under the assumption that any and all feedback offered is positive in nature and that the intentions of the person(s) providing feedback are strictly honorable. Insensitivity in this area will not be tolerated. If you have any questions about online communication, you should review the Fogelman College's Netiquette website.

Late Assignments:
Assignments/Activities that are submitted to the dropbox should be uploaded by the due date. Late submissions will be accepted only for one week beyond the due date if solutions are not discussed earlier, however, 1 point may be deducted for each day that the assignment is late.

Syllabus Changes:
The instructor reserves the right to make changes as necessary to this syllabus. If changes are necessitated during the term of the course, the instructor will immediately notify students of such changes both by email communication and posting both notification and nature of change(s) on elearn.

Student Services
Please access the FCBE Student Services page for information about:

- Students with Disabilities
- Tutoring and other Academic Assistance
- Advising Services for Fogelman Students
- Technical Assistance