Course Syllabus
MIS 7620-001 – Business Machine Learning I
Fall Semester, 2018
3.0 Credit Hours
(Last updated: 8/23/2018)

Instructor: Jeff Monroe
Phone1: 901.483.7303
Phone2: 901.419.7571
E-mail: jtmonroe@memphis.edu
Office: Virtual

Office Hours: The standard means for communicating with the instructor is via course email throughout the semester. Meetings may be scheduled by e-mail or phone calls.

Course Overview
This is an introductory course on the topic of Business Machine Learning. The student will acquire knowledge and skills to:
1. Understand the value of business intelligence and machine learning for an organization
2. Design and develop information systems that will capture relevant data from all segments of an enterprise
3. Organize that data into a coherent structure
4. Provide the means to analyze the data in order to make rational decisions

Students will study actual cases and be exposed to business analytics, business performance management, and the user interface.

Main Course Topics
• Introduction to Business Intelligence
• Supervised and Unsupervised Machine Learning Methods
• Data Mining Process
• Data visualization
• Analytical Methods, including Regression, Clustering and Decision Trees
• Artificial Neural network and its Business Applications
• Model Assessment and Deployment
• Introduction to Text Mining and Analytics

Pre-Requisites/Co-Requisites
Knowledge of statistics is helpful but not required.

Required Texts and Related Materials
• This course makes extensive use of visualization tools including Tableau. Examples of analytics using R and SAS Enterprise Miner will be provided.

Location of Course Materials
Course materials (lectures, discussion topics, news, etc.) are located on the eCourseware website (opens in new window).

Course Objectives
Upon successful completion of this course, students will:
• Understand and discuss the value of Business Information for organizational decision-making.
• Understand and define the Decision Support System (DSS) technologies required to implement a BI strategy for an organization.
• Understand organizational and governance issues related to effect business intelligence (BI) implementation and management.
• Understand and apply concepts, terminology, and techniques related to Business Performance Management (BPM).
• Define, differentiate, and apply data mart and data warehousing concepts and techniques used in implementing a Business Intelligence (BI) strategy.
• Understand and apply data mining concepts, processes, and tools within the context of business intelligence (BI).
• Understand and apply information security concepts within the context of business intelligence (BI).
• Understand and apply concepts related to text and web mining as a new form of business intelligence (BI).
• Explore and plan for emerging trends in the BI industry (Social Networking, Web 2.0, Virtual Worlds, etc.)
• Develop an awareness of legal and ethical matters related to business intelligence (BI).

Fogelman College: Learning Outcomes for Your Degree
The Fogelman College has established the following learning goals for all students successfully completing the MSIS degree:
• Graduates will be competent in the use of technology.
• Graduates will be effective communicators.

Course Methodology
To facilitate your active learning experience and to accommodate students with various educational backgrounds and different levels of analytical experience, this class adopts a hybrid learning approach by incorporating traditional in-class lectures and discussions on key concepts and methods as well as self-paced learning of analytical tools using a flipped learning methodology. Learning materials for analytical tools will be posted on eCourseware in advance and it is your responsibility to study these materials and be well prepared before coming to the lab session.

Professor’s Expectations of Students
Students are expected to attend classes, actively participate in discussions and hands-on activities, review the course content after class, and complete assignments on time. Students are strongly encouraged to contact me to discuss any concerns about this course or seek any additional help with course materials if needed. It is critical that students have access to computers with the installed software tools or broadband Internet connection that will allow access to UMware throughout the semester.

Student’s Expectations of the Instructor
Course materials will be well-organized and posted on eCourseware in advance. You will be engaged in an active and supportive learning environment. I will respond to your emails within 2 days if not sooner. Submissions will be graded within 7 to 10 business days and your up-to-date grade will be posted on eCourseware throughout the semester.

Grading and Evaluation Criteria
Over the semester, you will have a variety of opportunities to earn points towards your final letter grade in this course. This section of the syllabus describes the grading components and how the final letter grade will be computed.

**Final Course Grades**
Final course grades are computed as follows:

<table>
<thead>
<tr>
<th>Point Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90.0 and above</td>
<td>A</td>
</tr>
<tr>
<td>80.0 – 89.9</td>
<td>B</td>
</tr>
<tr>
<td>70.0 – 79.9</td>
<td>C</td>
</tr>
<tr>
<td>60.0 – 69.9</td>
<td>D</td>
</tr>
<tr>
<td>Under 60.0</td>
<td>F</td>
</tr>
</tbody>
</table>

Your overall points will be based on attendance and participation, assignments, exams, and group project according to the following scheme.

<table>
<thead>
<tr>
<th>Deliverables</th>
<th>Total Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and Participation</td>
<td>10</td>
</tr>
<tr>
<td>Assignments</td>
<td>20</td>
</tr>
<tr>
<td>Midterm</td>
<td>25</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25</td>
</tr>
<tr>
<td>Group Project</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Course Topics:**
The lecture notes for this course were compiled from more than two decades of work in industry in a variety of analytical roles. The lectures will include a review of the text and provide an applicable case study. The lectures will provide case studies in areas of Finance, Marketing, Supply Chain, Human Resources and others. During the course, you will learn to organize data, perform analysis, create visualizations and automate business processes to reduce error and improve efficiency and add value to the organization.

There are 25 lectures are divided into 8 sections aligning with the course text.
1. Lectures 1-2: Overview of Business Intelligence, Analytics and Data Science
   a. Introduction and Course Overview
   b. Analytics Overview
      i. NFL Prediction Model, or Why I still work for a living
   c. The Analytics Ecosystem
      i. Tools, tools everywhere, all of them make me think.
2. Lectures 3-8: Descriptive Analytics I: Nature of Data, Statistical Modeling, and Visualization
   a. Statistical Modeling for Business Analytics
      i. The trend is your friend until the end when it bends. How a company rethought its analytics after the Great Recession.
   b. Regression Modeling for Inferential Statistics
      i. Forecasting product demand in an uncertain environment
   c. Business Reporting and Data Visualization
      i. What we have here is failure to communicate
   d. Data Visualization
      i. Tableau Fundamentals
      ii. Tableau Intermediate
3. Lectures 9-11: Descriptive Analytics II: Business Intelligence and Data Warehousing
   a. The Data Warehouse
      i. You’re gonna like the way it looks
   b. Business Performance Management
      i. I love it when a plan comes together
   c. Six Sigma
      i. You might be a black belt if . . .
4. Lectures 12-14: Predictive Analytics I: Data Mining Process, Methods, and Algorithms
   a. Data Mining Concepts and Applications
      i. We’re all the same, but different - global life cycle analysis
   b. Data Mining Process
      i. Three legs are better than two
   c. Data Mining Methods
      i. Can you dig it?
5. Lectures 15-18: Predictive Analytics II: Text, Web, and Social Media Analytics
   a. Text Mining
      i. How to catch a cheater
   b. Sentiment Analysis
      i. Emotions in motion
c. Web Mining
   i. You’ve got the whole world in your hands

d. Social Analytics
   i. Who’s the boss?

   a. Mathematical Models for Decision Support
      i. Don’t hate the playa - game theory for product pricing
   b. Decision Modeling
      i. Where to next? – global trade optimization.

   a. Big Data Technologies
      i. How I learned to stop worrying and love Hadoop
   b. Big Data and Data Warehousing
      i. I never metadata I didn’t like
   c. Stream Analytics
      i. I knew who I was this morning, but I’ve changed since then

8. Lectures 24-25: Future Trends, Privacy and Managerial Considerations in Analytics
   a. Cloud Computing and Business Analytics
      i. Two’s company, three’s a cloud
   b. Location-Based Analytics for Organizations
      i. You talkin’ to me?

Attendance and Participation
You are expected to attend all classes, contribute to discussions, and participate in hands-on activities in class. You are responsible for the material we cover in class if you miss a class. Lecture slides and/or handouts will be posted on the course website in advance. Please note that office hours are not a substitute for class attendance and participation.

Assignments
Students will complete each assignment individually. Each assignment carries the same weight and your final assignment score will be based on the average of your assignment scores after dropping your lowest score. Assignments will be submitted on eCourseware unless specified otherwise. Due dates for all assignments will be strictly observed and no late submission will be accepted without the instructor’s approval. Plagiarisms are strictly prohibited.
Exams
There will be one midterm exam (25%) and one final exam (25%) for this course. Both are in-class and closed-book exams. It will cover lecture material, class discussion, and additional reading materials assigned by the instructor. The exam consists of multiple choice questions, true/false questions, and short answer questions. Please see the schedule for the exam dates. If you know in advance that you will be absent the day of the scheduled exam, you need to make arrangements with me prior to the exam date. If you miss an exam because of illness or other unforeseeable emergency (proper documentation required), you must contact me by email or phone within three days of the scheduled exam date to make arrangements for a makeup exam. Failure to do so will result in a grade of zero for the exam.

Group Project
Project groups will consist of 3 to 4 students. Each group will select a business problem and the associated dataset(s) from current or completed data challenges (e.g., Kaggle, Yelp, Teradata university network) or other sources with instructor’s approval. Students will then apply the techniques and methods learned in this class to explore, prepare, and analyze data, interpret findings, and complete a written report. Project deliverables include a presentation and a written-report at the end of the semester. Detailed requirements will be posted on eCourseware. Datasets used in projects of other courses may not be used in this course without the instructor’s approval. Project score will be based on project proposal, progress reports, presentation, written-report, and peer-evaluation.

Schedule of Activities
For a schedule of readings, activities, and due dates for assignments, please refer to the “Tentative Schedule” under “Course Introduction” module on the course website.

Final Exam Schedule
The final exam for this class will be scheduled according to the Registrar’s academic calendar website (opens in new window).

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.
Attendance
Since this is an online class taught asynchronously, there are no scheduled meeting times. Thus, formal attendance will not be taken. However, you are expected to stay active and engaged throughout the academic term and keep up with the schedule of activities. Your full engagement in the class begins on the first day of the semester and should be maintained until the last assignment is submitted. For students receiving federal student loans, any lack of engagement in the course may be treated as non-attendance and potentially impact access to student loans in the future.

Adding/Dropping
If you have questions about adding or dropping classes, please refer to this page on the Registrar’s website (opens in new window).

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 (opens in new window).
If you have any questions about academic integrity or plagiarism, you are strongly encouraged to review the Fogelman College's Website on Academic Integrity (opens in new window).

Participation
To be successful in this course as a student, 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 threaded discussion events (both formal and informal). You should plan on logging into the course at least three times each week.

Classroom 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 (opens in new window).
Late Assignments
Assignments and projects may be submitted anytime up to and including the date due. Please review all information in this syllabus and related “Course Activity Summary / Schedule” for all due dates for formally assessed work. If your work is not submitted on time, the instructor reserves the option to deduct up to 20% of the grade value for tardiness depending upon the circumstances and appropriate communication between the student and the instructor.

Extra Credit
There is no extra credit offered in this course. Your final grade will be computed based on your work on the assessed activities previously described in this syllabus.

Reporting Illness or Absence
Due dates and deadlines have been established for each graded assignment. In this course, deadlines are taken very seriously. Please do not wait until the last day to submit assignments or to take quizzes and exams. If an emergency should arise, it is the student’s responsibility to contact the instructor prior to the deadline to discuss the matter. A deadline extension will be considered only if all of the following conditions are met:
(1) Extreme emergency and (2) Instructor contacted prior to the due date.

Inclement Weather
In the event that inclement weather requires the cancellation of classes at The University of Memphis, local radio and television media will be immediately notified. Additionally, The University of Memphis has established an Inclement Weather Hotline at 678-0888 as well as TigerText (opens in new window), an emergency alert text messaging service to students, faculty and staff. This optional service is used in the event of an on-campus emergency, an unscheduled university closing, or a delay or cancellation of classes due to, for instance, inclement weather. Additional information on TigerText (opens in new window).

Syllabus Change
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 individual email communication and posting both notification and nature of change(s) on the course bulletin board.

Student Services
Please access the FCBE Student Services (opens in new window) page for information about:

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