

BAN 5743, Spring 2018
Predictive Analytics
CRN – 26774 Online (OL) Syllabus

Professors: Dr. Miriam McGaugh (main point of contact) and Dr. Goutam Chakraborty

Contact Information:

Office: 307 SSB (old) 429 SSB (new) - Since the Business School is in transition this semester from the old building to the new building, I have included both office numbers. I will not know an exact date when my office will be moving but it should be by the end of spring break. I will notify all students through regular communication channels when my office does move.

Phone: (405) 744-2208, Fax: (405) 744-5180

Office Hours: In the office, by phone or virtually through the online main chat room on Tuesdays from 1:30 to 3:00 pm CST (Central Standard Time) or by appointment.

Course Site: (Brightspace by D2L): <http://online.okstate.edu> or <http://my.okstate.edu>

Online Learning Support: spearsonline@okstate.edu

Phone: 405-744-4048

Facebook: Follow Spears School Online Learning on Facebook!

<https://www.facebook.com/SpearsOnline/>

Course Description (goals/objectives):

This course assumes you must have successfully completed descriptive analytics techniques (BAN5733) and preferably completed STAT5013. The primary objective of this course is to prepare second-semester MSBA students to learn how to convert business data (both numeric and text) into actionable information. This course will focus on learning how to use various analytics tools such as neural networks, decision trees, classification and prediction algorithms, text and sentiment mining algorithms, etc. in the context of most common applications in business – sales, marketing, and customer relationship management (CRM). Students will be expected to use state-of-the-art industrial strength data mining software (SAS Enterprise Miner) as well as open-source tools such as R, Python to analyze real-world data and make strategic recommendations for managerial actions. My philosophy in teaching the course is “you learn by doing,” that is, you should be prepared to work extensively with various software in analyzing data sets using various techniques such as neural networks, decision trees, multiple/logistic regression, association rules, sequence detection, ensemble models, text mining, sentiment mining, content categorization, etc. The course will use lectures, data analysis, case discussions, and exercises. All class lectures will be handled via video (video links will be posted on Brightspace) that you can watch at our own convenience (you will need a high-speed Internet connection to watch the lectures). However, you must work on exercises/assignments/projects as assigned by the instructor and turn these in via the drop box by the specified deadline.

Objectives: This course has five major objectives that fit within five of the program learning goals.

Course Objective	Program Learning Goal
Students will be able to engage in analytical reasoning to break problems into their component parts; identify important patterns by analyzing data; and test for assumptions behind models.	• Critical Thinking
Student can apply science and business principles to analyze and interpret data, using analytic and computer-based techniques.	• Critical and Creative Thinking
Students will be able to present written results from their analyses by relating those back to the business issues that demonstrate a mastery of language and mechanics.	• Written Communication
Students will be able to use appropriate tools and technologies for data visualization and statistical model building	• Technology Skills

Course Prerequisites:

BAN 5733 or

Permission from the Instructor

Computer and Software Requirements:

- A broadband internet connection
- Windows 7 or Mac OS Mavericks or newer operating system are preferred
- Google Chrome or Mozilla Firefox web browser
- Note: lecture videos are not compatible with Internet Explorer or Edge
- [VLC Viewer](#) video player (click on link to download)
- SAS Software – Base SAS, SAS Studio, Enterprise Guide and Enterprise Miner accessible by:
 - o <https://app.it.okstate.edu/sdc/> - SAS 9.4 32 or 64 bit depending on system (need to download activation file also) – get you all but Enterprise Miner
 - o Virtual SAS Server – get you all including Enterprise Miner
<https://desktop.okstate.edu/>
 - o SAS University Edition - – get you all but Enterprise Miner
https://www.sas.com/en_us/software/university-edition/download-software.html

Note: Please see the Online Classroom system for additional information on accessing and/or installing SAS software.

Communication Plan:

Teaching Assistant (TA): The TA for this class will be announced via Brightspace during the first two weeks of class. There may be other TAs helping me with this class as well. But, the announced TA will be your primary point of contact for any issues related to this class. The TA will monitor the Brightspace Discussion Board platform twice a day (morning and afternoon). If they are not able to answer your questions immediately, they will contact me and get a response to you as soon as possible (usually within 24 hours).

E-mail: Please use the class discussion board via Brightspace for any general questions, comments, clarifications about any of the class topics (including cases, assignments etc.). Use

the e-mail to my TA sparingly and only for questions that disclose or ask for personal information (such as grades, scores, etc.) *There is no need to copy me with your email to my TA – if my TA is unable to answer your question, he/she will discuss with me and get back to you.*

Response Times: The TA and I will respond to student inquiries within 24 hours during Monday-Friday business hours. Students may expect grades for assignments to be posted to the Gradebook in the online classroom within two weeks of turning in the assignment. **Please consider these timelines when you are scheduling your course work assignments. While the TA and I will do everything we can to respond in a timely manner, waiting to post a question one hour before the assignment is due will not allow for adequate time for a response.**

Class Discussion via Brightspace (<https://online.okstate.edu/>): We will use this format extensively for communication among students as well as between students and the instructor. This will be a bulletin-board type system with specific folders for different aspects of this course. There will be multiple forums (folders) in this bulletin board. Please check these folders regularly. Please post your questions only in the **appropriate forums**. Please use appropriate subject line in your posting and use threaded discussion whenever possible. All students are expected to participate in all aspects of the class. Online discussions can provide everyone with valuable tips and techniques to common problems. One thing I do not want is a string of postings with little to offer on the topic (i.e., Thank you, ditto, me too, etc.). If you are responding to a post, please make it courteous and helpful. Do not type in all caps unless it is within a program or your classmates will think you are mad about something that was said.

Required Text:

There is **no required textbook** in this class. I will primarily use readings off the web, cases, SAS training materials, chapters from reference books, etc. in this class. I have indicated a number of good books (under reference texts) on this topic that you may find useful. I will announce additional readings via postings on Brightspace or via email.

Reference Texts:

You will find them very useful for writing papers and doing assignments, exams, projects and going on interviews. So, I strongly recommend that you read them. I will put them on reserve at OSU library for Stillwater based students for a 2-hour checkout basis. Off campus students will be able to access #1 for free via OSU's library link. You should consider buying say #2 or #3.)

1. Text Mining and Analysis: Practical methods, Examples and case Studies using SAS® by Goutam Chakraborty, Murali Pagolu and Satish Garla, SAS Publishing, 2013, Cary, NC, SAS Institute Inc. (OSU Library Call number: 005.55 C435t)
2. Handbook of statistical analysis and data mining applications, by Nisbet, Elder and Miner, Academic Press/Elsevier, 2009, (OSU library call number: 006.312 N724h)
3. Data Mining Techniques for Marketing, Sales and Customer Relationship Management, by Michael J. Berry and Gordon S. Linoff, Wiley Publishing Inc., 2011. (OSU library call number: 658.802 B534d for 2004 version of this book)
4. Data Preparation for Data Mining by Dorian Pyle, Morgan Kauffman publications, 1999. (OSU library call number: 005.74 P996d)

Course Format:

The class will be conducted using pre-class readings and videos and hands-on practice exercises. Lecture videos will be available via BRIGHTSPACE in streaming video. Other formats may be available based on need (downloadable zip file and podcast). Lecture videos average around 50 minutes in length per chapter.

There is weekly lab class for the on-campus section of this course that focuses on hands-on practice and review; however, students from this OL section are not required to attend the lab class. You will however be given access to lab videos as appropriate (where we may discuss solutions to assignments, exercises, cases and/or handle Q&A on lecture topics). Students will be expected to view the weekly lab video posted by Thursday morning.

OL students will also have an option to use a “Go To Meeting” based call-in to talk to faculty or participate in the lab class at 9:00 AM US CDT during each Monday’s lab.

GoTo Meeting Information:

BAN 5743 Lab

Please join my meeting from your computer, tablet or smartphone.

<https://global.gotomeeting.com/join/275215109>

You can also dial in using your phone.

United States: +1 (312) 757-3121

Access Code: 275-215-109

First GoToMeeting? Let's do a quick system check: <https://link.gotomeeting.com/system-check>

Each student will be given access to OSU’s virtual SAS via VMWare (you will need high-speed Internet connection and VPN access to OSU to connect to this from off-campus). We may use Base SAS, SAS EM, SAS Studio, JMP Pro very heavily in this course along with R and Python (free versions available online). I strongly recommend that you get SAS for your own PC/Laptop so you are not completely dependent on the virtual access (which may be slow at times due to heavy usage or slow Internet access).

Finally, as instructors we retain the right to modify this tentative syllabus based on how the class progresses. If changes are made, I will let you know via Brightspace and/or email.

Exercises and Assignments:

Throughout the semester, I will assign homework assignments due each week following the material being covered. Please see the tentative schedule and Brightspace Dropbox for additional information. Assignments should be turned into the online classroom Dropbox by **midnight** CST (Central Standard Time) of the due date. See Late Policy for information regarding late assignments.

These assignments will reinforce the concepts covered in the lectures and will help you begin to critically think about marketing analytics and its uses. The lowest homework assignment will be dropped from the final grade calculation. Homework assignments will count for **100 points of the course grade**.

Exams:

There will be two exams for this class. The midterm and comprehensive final exam will be proctored exams and you will have a 48-hour window in which to complete them (please consult tentative schedule). See Action item below for additional information on proctoring. Your score on either exam will count for **250 points of the course grade**.

ACTION: one week prior to course start date, go to the Spears School of Business Online Learning website to choose a testing center at: spearsonline.okstate.edu, and click on “Select Testing Center” at the top right of the page. Follow the instructions to identify your testing center. Up to one week before each exam start date, make your appointment directly with your testing center to take each exam while being monitored by a proctor for test security reasons. The exam and/or exam instructions will be sent to your testing center 3 days prior to the exam start date. To confirm your testing center received the exam/exam information, call at least one day prior to your appointment time. If the center does not have your exam, contact the Spears School Online Learning office immediately at spearsonline@okstate.edu, or call (405) 744-4048 to request the exam to be sent. Contact that same office if you have any questions regarding the testing center sign up process. You may also visit <http://spears.okstate.edu/online/guide>.

Grading Policy:

The grades in this class break down as follows:

Exercises/Assignments	100 pts
<u>Exams</u>	<u>250 pts</u>
Total Points	350 pts

Letter grades will be assigned according to the standard scale.

313-350 pts. = A
278-312 pts. = B
243-277 pts. = C
208-242 pts. = D
0-207 pts. = F

Late Assignments: Assignments must be turned in according to the date and time on the syllabus via Brightspace drop box (not emails). All late assignments (***even 1-minute late***) must be turned in **via the Late Drop Box** and will be *penalized* as follows:

- One late assignment (within 48-hours of due date and time) – *no penalty*
- All other late assignments will carry following penalty structure:
 - Within 1 hour of due date and time – 15% penalty
 - More than 1 hour but less than 24 hours of due date and time – 30% penalty
 - More than 24 hours but less than 48 hours of due date and time – 50% penalty

- o More than 48 hours of due date and time – will not be graded (no credit)

We enforce this rule because we believe that part of effective functioning in business is the ability to complete projects on time. **Please do not email/call/contact us or the TA with excuses (however valid they may be) about making exceptions to the late submission policy.**

Attendance Policy: Students who have not participated in at least one assignment in Brightspace (BRIGHTSPACE) (discussion board, specific assignment, etc.) within the first two weeks of the course will be reported as not having attended class. The instructor will then recommend the student to drop the course.

University Policy:

Drop Policy

Information about university drop policy and dates is at this website: <http://registrar.okstate.edu/>
To drop this course, contact the Registrar's office, (405) 744-6876, or drop through Banner Self Service, <http://my.okstate.edu>

Academic Integrity

Oklahoma State University is committed to the maintenance of the highest standards of integrity and ethical conduct of its members. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and fraudulently altering academic records) will result in your being sanctioned. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript (F!), and being suspended from the University. You have the right to appeal the charge. Contact the Office of Academic Affairs, 101 Whitehurst, 405-744-5627, <http://academicintegrity.okstate.edu/>.

Accessibility

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact the instructor as soon as possible, so we can discuss accommodations necessary to ensure full participation and facilitate your educational opportunity. For more information about OSU Student Disability Services, please go to: <http://sds.okstate.edu>.

Syllabus Attachment

For more student resources, go to: <https://academicaffairs.okstate.edu/content/resources-students>

Tentative Schedule:

Week	Video Lecture Availability	Video Lecture Content	Online Lab Video Availability	Online Lab Class Content	Exercises	Exercise Due Date
1	16-Jan-18	Overview of basics of data mining and predictive analytics	No Lab Class	Introduction to class and schedule review	--	--
2	22-Jan-18	Overview of data management and data preparation for predictive analytics	22-Jan-18	Demo and exercise using SAS, R, JMP or Python	Exercise 1	30-Jan-18
3	29-Jan-18	Exploring and preparing data with summary statistics, plots. Handling missing values, transformations and extreme values.	29-Jan-18	Demo using SAS, R, JMP or Python	Exercise 2	6-Feb-18
4	5-Feb-18	Predictive modeling via decision trees	5-Feb-18	Demo and exercise using SAS, R, JMP or Python	Exercise 3	13-Feb-18
5	12-Feb-18	Predictive modeling via regression models	12-Feb-18	Demo and exercise using SAS, R, JMP or Python	Exercise 4	20-Feb-18
6	19-Feb-18	Predictive modeling via neural network	No Lab Class	No Lab Class	Exercise 5	27-Feb-18
7	26-Feb-18	Model assessment, model implementation and special topics	26-Feb-18	Demo using SAS, R, JMP or Python	Exercise 6	6-Mar-18
8	5-Mar-18	Review of topics for midterm exam	5-Mar-18	Review of topics for midterm exam		
9	12-Mar-18	Midterm Exam				
10	19-Mar-18	Spring Break - No Class				
11	26-Mar-18	Pattern discovery techniques (market segmentation via clustering)	26-Mar-18	Demo and exercise using SAS, R, JMP or Python	Exercise 7	3-Apr-18
12	2-Apr-18	More on clustering and segmentation	2-Apr-18	Demo using SAS, R, JMP or Python	Exercise 8	10-Apr-18
13	9-Apr-18	Introduction of text analytics	No Lab Class	No Lab Class	Exercise 9	17-Apr-18
14	16-Apr-18	Advanced topics for text analytics	16-Apr-18	Demo using SAS, R, JMP or Python	Exercise 10	24-Apr-18
15	23-Apr-18	Sentiment analysis and opinion mining	23-Apr-18	TBA	Exercise 11	1-May-18
16	30-Apr-18	Review of topics for final exam	30-Apr-18	Review of topics for final exam		
17	7-May-18	Final Exam				