

Advanced Business Analytics (BAN 5753) – Tentative Syllabus Fall 2017

(All students must check class site regularly for schedule, updated syllabus, etc.)

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Guest Lecturers: Dr. Venu Gopal Lolla and Randy Collica

Class Materials: Most of the class materials will be distributed via the online web site for this class (<https://online.okstate.edu/>). If you are a registered student for this class, you should be able to see this course when you log-in to the web site (the course becomes active one-week before classes begin). If you have problems accessing the class site, please call OSU's IT help desk (405-744-435) or (toll free) 1-877-951-4836).

Teaching Assistant (TA): Will be announced in the first week of class. Please note that the TA will be your primary point of contact for any issues related to this class.

E-mail: Please use the class discussion bulletin-board via class site for any general questions, comments, clarifications about any of the class topic (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.*

Class Discussion via class site: We will use this site extensively for communication among students as well as between students and the instructor. The discussion will be via a bulletin-board type system with specific folders for different aspects of this course. There may 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.

Required Text:

There is **no required text book** 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 readings via postings on D2L or via email.

Reference Texts:

These are great resources. You will find them very useful for writing *papers* and doing *projects* and in appearing for *interviews*. So, I strongly recommend that you read them.

- Predictive Modeling with SAS Enterprise Miner, by Kattamuri Sarma, 2nd Edition, SAS Press Series, 2013.
- Applied Data Mining for Forecasting using SAS by Tim Rey, Arthur Kordon and Chip Wells, 1st Edition, SAS Press Series, 2012.
- Decision Tress for Business Intelligence and Data Mining, by Barry De Ville, 2nd Edition, SAS Press Series, 2012.
- Hadoop: The Definitive Guide: Storage and Analysis at Internet Scale, White, Tom.
- Programming Hive: Data Warehouse and Query Language for Hadoop, Capriolo, Edward.
- Programming Pig: Dataflow Scripting with Hadoop, Gates, Alan.
- Advanced Analytics with Spark: Patterns for Learning from Data at Scale, Ryza, Sandy

Real Office Hours (to talk to me in person)

Tuesday, 2-3 PM or by appointment.

Virtual Office Hours (to get my opinion on any issue related to this class)

Please use the online platform for this purpose. I (and my TAs) will monitor this platform closely and try to answer your questions quickly. I may also set up a SKYPE or “Go To Meeting” based call-in office hours *for DL students* so you can talk to me (individually or as a group). Details will be communicated via class site.

COURSE 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 present their results orally using a message that is well organized, concise and quickly understandable by business professionals.	• Oral Communication
Students will be able to use appropriate tools and technologies for data visualization and statistical model building	• Technology Skills

Course Prerequisites

My assumption is before coming into this advanced class, you have already acquired skills related to descriptive (BAN5733) and predictive analytics (BAN5743). It is also assumed that you have understanding of concepts of database management systems and SQL. Some Python programming experience is strongly recommended even though it is not required.

Course Description

In this course will focus on learning how to use **advanced business analytics tools including time series forecasting, survival data mining, econometric and other models** in the context of common applications in business. In addition, the course will introduce and prepare students to **use Big Data technologies, concepts, and tools such as Hadoop, Hive, Pig, and Spark** (and others) for data analysis applications. Students will be expected to use state-of-the-art industrial strength data mining software (SAS Enterprise Miner as well as Base SAS, R and Python) as well as Apache Hadoop, Pig, Hive, Spark and other tools from the Apache zoo in this course. The big data tools will be made available through an Oracle VirtualBox image that will be available as a free download.

My philosophy in teaching the course is “*you learn by doing*,” that is, you should be prepared to work extensively with software in analyzing data sets. Most (not all) class lectures will be handled via recorded video (video links will be posted on the D2L course site) that you can watch at our own convenience (you

will need a high-speed Internet connection to watch the lectures). However, some lectures will be handled in special Friday/Saturday training session involving guest lecturers. Be prepared that you must work on exercises/assignments/projects as assigned by the instructor and turn these in via class site drop box by the specified deadline.

Course Format

Lectures: The link for each video lecture will be posted on the class site. It is your responsibility to watch the lecture video and do appropriate readings/exercises **before** coming to the lab. *All students (both non-distance learning and distance learning)* will be given access to lecture videos. Some of the lectures will be handled via special Friday/Saturday sessions (see s events on class site calendar and on posted schedule).

Labs

- *Non-Distance learning students:* All non-distance learning students **must attend lab on the specified day/time based on the section you are enrolled in**. The lab sessions will be used primarily for doing exercises, assignments, cases, data analysis, pop-up quizzes, questions and answers, etc. **All lab sessions will be held in the Gunderson computer lab.**
- *Distance learning students:* *You do not have to attend labs physically.* You will however be given access to lab videos both real-time and recorded a (where we may discuss solutions to assignments, exercises, cases and/or handle Q&A on lecture topics). I expect you to watch these lab videos as soon as they become available or attend via live lab session.

Note: As an instructor, I retain the right to modify course syllabus/schedule/requirements as appropriate based on how the class progresses. Any such changes will be communicated to you via email/D2L or in class (lab).

Class Requirements (for Both Distance Learning Non-Distance Learning Students)

Special note: Several lecture sessions will be held on Friday/Saturday as identified in course calendar/schedule. All non-distance learning students must attend those sessions. DL students may attend live sessions via Go To meeting or, watch recorded videos of these special sessions.

Lab Participation, Attendance and Exercises (Individual): Because of the emphasis on “hands-on learning” in this course, attendance at all scheduled lab meetings is *mandatory*. You are responsible for having read and analyzed the assigned cases and/or readings or finish watching the video lectures prior to each lab session. You can expect to be called upon to comment on these materials on a regular basis in the lab sessions. I may also use short pop-up quizzes from time-to-time to evaluate your understanding of lecture materials and assigned readings. These pop-up quizzes will be administered at the beginning of the lab and will be used for class participation points. If you are late in coming to the lab and/or absent, you will miss the participation points for that session. Throughout the semester you will also be working on many exercises (using appropriate software) in the lab and during the week. Lab work (exercises, participation, discussion, etc.) will count for **25% of the course grade**. You must bring a table card (that clearly shows your name) to each lab session.

Group Project: You are required to participate in an advanced analytics project in this class. Your performance in this activity will count for **50% of the course grade**. Project will be done in groups of about 4 students. I strongly encourage you to have a mixed team with both DL and non-DL students in each group. More details will be announced in class.

Final Exam: A comprehensive final exam will be administered during the finals week. It will count for **25% of the course grade**. All Stillwater students will take the final exam on Monday evening of the finals week. DL students will take the final exam on either Monday or Tuesday of the finals week. All DL students must set up proctoring arrangements by contacting the distance-learning office (405-744-4048 or, email spearsonline@okstate.edu) within **first three weeks** of the semester.

Semester Grades: The final grade will be based as follows: 90% or above will result in A, 80% or more will result in B, 70% or above will result in C, 60% or above will result in D, and so on. I will look at the distribution of the total scores and use any appropriate normalization as needed within each section (DL and non-DL)

Late Assignments: Any assignment (individual or groups) must be turned in by the class time on the due date via bight space 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 1-hour 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
 - More than 48 of due date and time – will not be graded (no credit)

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

Note: More details on the assignments/cases/readings/projects will be posted on the class site. Also, for all other issues such as add/drop policy, academic integrity etc., I will follow OSU guidelines as posted in the site below – look at the bottom of the following page for syllabus attachment
<http://academicaffairs.okstate.edu/content/resources-faculty-staff>.

Student Disability Service Issues: If any member of the class believes that s/he has a physical, emotional, or psychological disability and needs accommodations of any nature, the instructor will work with you and the university Office of Student Disability Services (SU 315, 744-7116 v/t) to provide reasonable accommodations to ensure that you have a fair opportunity to perform in this class. Please advise the instructor of such disability and the accommodations as soon as possible. You will need to also contact the Student Disability Services office. receive accommodations. No accommodations will be made without prior notification.