Business Analytics
Fall 2013
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Catalog description
Business Analytic is an interactive process of analyzing and exploring enterprise data to find valuable insights that can be exploited for competitive advantage. IT capabilities and infrastructure needed are discussed.

Detailed Description:
Technological advances, decreased costs of hardware and software, and the world-wide-web revolution have allowed for vast amounts of data to be generated, collected, stored, processed, analyzed, distributed and used at an ever-increasing rate by organizations and governmental agencies. Simultaneously, managers must rapidly and thoroughly understand the factors driving their business in order to sustain a competitive advantage. Organizational speed and agility supported by fact-based decision making are critical to ensure an organization remains at least one step ahead of its competitors. As a result, there is a growing awareness that by leveraging data resources to develop and deploy business strategies to enhance their decision-making capabilities, organizations can gain and sustain a competitive advantage. Business Analytic (BA) is an attempt to achieve these goals. BA is an interactive process of analyzing and exploring enterprise data to find valuable insights that can be exploited for competitive advantage. Business Analytics allows organizations to better understand, anticipate and shape business outcomes. This course introduces business analytics as tool to gain competitive advantage and provides a number of practical implementation details using several real-life cases. Specifically, the course shows how to discover subtle patterns and associations from business data and develop and deploy predictive, clustering, and market basket models to optimize decision-making throughout organization. Managerial and technical issues in development and deployment of business analytics are discussed.

Student Learning Outcomes:
Upon completion of the class, students will be able to:
1. Describe and interpret the basic concepts of Business Analytics (BA).
2. Describe basic principles of data mining as a basic tool of Business Analytics
3. Evaluate business problems and determine suitable analytical methods
4. Evaluate the difficulties presented by massive, opportunistic data
5. Plan, organize and evaluate methods to prepare raw data for business analytics, including partitioning data and imputing missing values
6. Compare and contrast different BA techniques
7. Interpret, analyze and validate the results
8. Synthesis the types of questions Business Analytics using data mining can be answered
9. Evaluate different methods of data mining and how they compare

Course Material
This course is Web based and delivered on-line. All needed teaching material including text books and readings are available electronically via BlackBoard, Please sign into BlackBoard to gain access to the material. In addition to the text books, and other teaching material, articles from both academic and practitioner publications will be posted on the Blackboard.
• The required text books for this course are:
1. *Applied Analytics Using SAS® Enterprise Miner™*, By Tom Bohannon, Mike Hardin, Dan Kelly, Bob Lucas, and Sue Walsh, SAS Press. This text is based on course notes that were developed by Jim Georges, Jeff Thompson, and Chip Wells for a course in Business Analytics taught at SAS Institute. ISBN: 978-1-60764-593-1. This text book is available Free via BlackBoard.


- All other reading material, projects, handouts and other learning resources needed for this course are available at the course BlackBoard site. It is your responsibility to have read the readings assigned to you prior to coming to class.

**Software Needed for the Course:**
This course makes extensive use of **SAS® Enterprise Miner™ 12.1** for this class. You will have two options to access the software.

- **Option 1:** You can get your own personal copy of SAS and **SAS® Enterprise Miner™** and install it on your laptop. The instruction for getting your personal copy is on BlackBoard. You need to do this during the first couple of weeks of the semester. **SAS® Enterprise Miner™** which now is part of SAS 9.3 is VERY expensive and powerful software and having your own personal copy is a good thing.
- **Option 2:** You can use SAS Cloud based version of software. Instructions as how to do that are also on Blackboard.

**Evaluation and Grading:**

**Grading:**

The course grade will be calculated using the following weights:

<table>
<thead>
<tr>
<th>Course Components</th>
<th>Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribution to course and discussion board and Collaborations</td>
<td>50</td>
<td>5%</td>
</tr>
<tr>
<td>Enterprise Miner Assignments</td>
<td>400</td>
<td>40%</td>
</tr>
<tr>
<td>Final Project and Case Analysis and Write ups</td>
<td>300</td>
<td>30%</td>
</tr>
<tr>
<td>Final Examination – Integration/synthesis</td>
<td>250</td>
<td>25%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1000</strong></td>
<td><strong>100%</strong></td>
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</tbody>
</table>

Letter Grades and Points

**Final Exam:**
We will have one comprehensive final exam. The final exam is given on Dec 2th.

**Final Project:**
We are going to have a final projects dealing with Business Analytics, where you will be developing and examining the impact of a BA tool in actual business environment. This project will have two portions.
I will describe this project further as we go along in the course.

**Enterprise Miner Software Implementation Assignments**
We will have three topical assignments each one dealing with specific tools available in SAS® Enterprise Miner™. All assignments are due on date/time specified in your syllabus. Assignments turned in late will be assessed a grading penalty. Assignments submitted after the due date may not be accepted but, if they are based on valid excuse, there will be a minimum of a 20% reduction for each day late. Also, any assignment that requires rework will be assessed at least 20% penalty.

**Attendance Policy:**
Since it is an online class, no physical class-room attendance is required. It is the student’s responsibility to stay on track with readings and assignments to be successful in the course.

**Netiquette:**
The same guidelines that apply to traditional classes should be observed in the virtual classroom environment. Please use proper netiquette when interacting with class members and the professor.

**Policy on Server Unavailability or Other Technical Difficulties**
The university is committed to providing a reliable online course system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will extend the time windows and provide

**Electronic Mail and Blackboard (BB) Accounts:**
You should check your UNCG email and BB Course link regularly as I may send email updates or add new info on BB on an ongoing basis. You will be responsible for any information or announcements contained in the email messages or updates on BB.

**Academic Integrity, Ethical Issues and the Honor Code Policies:**
Students are responsible for becoming familiar with the Academic Integrity Policy in all its aspects and for indicating their knowledge and acceptance of the Policy by signing the Academic Integrity pledge on all major work submitted for the course. Specific information on the Academic Integrity Policy may be found on the UNCG web site at [http://academicintegrity.uncg.edu](http://academicintegrity.uncg.edu)

All individual assignments must be done by only you. Individuals should not work on assignments together. A single failure to follow this policy will result in a grade of 0 on that assignment; subsequent violations of this policy will result in a grade of F for the course. University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such illicit possession of examinations or examination materials, forgery, or plagiarism. Students will NOT make, borrow, or "share" copies of their lab assignments or files with other students. Plagiarism is defined as "presenting as one’s own work that work which is, in whole or in part, the work of another person or persons without giving proper credit to the appropriate source." This includes submitting work done by another, as one’s own work. It is understood that what you turn in to me for grade represents your own effort. Plagiarism will be immediately punished with a grade of zero for the assignment in question. Further disciplinary action will be pursued as I deem appropriate. Helping one another is allowed, but copying is cheating. This practice is against the UNCG Honor Code and defeats the purpose of this course. No credit will be received for shared work, and other penalties may be imposed. I will pursue cheating as far as the university allows me.
**Course Routine and Schedule**

To provide some structure to each week of study, we will follow the routine described below:

- **On each Monday to Wednesday** of a particular week, check the BlackBoard for that week. You should look for the online topics for the week, and download and start reading the week’s reading and plan on viewing the multimedia files, etc.

- **By Thursday or Friday** of each week, you should have completed the readings and tutorial and start working on any assignments. In those days, you should look on Blackboard a couple of times a day for Discussion Board questions, Blogs and Wikis to read and enter into the interactive exchanges with other students and the instructor. You should post your comments about the week’s readings, assignments or any other questions.

- **On Saturday or Sunday** of the week, you should be wrapping up your reading and get ready for next week and get ready to submit any deliverables

- **On Monday**, of starting the second week of the course, you should upload your assignment, if any, to BlackBoard and start over.

- I will respond to emails within 24 hours. I will read and post comments when appropriate in the discussion forums each week between Thursday and Sunday midnight. I will check course statistics each Sunday. The Grade book will be updated each Monday at 8 AM. You may access your grade.

**What you need to take this course:**

1. Your reading list and individual articles and readings in that list.
2. You must have access to a computer that connects to the Internet. The course materials are only accessible online by logging in to [http://blackboard.uncg.edu](http://blackboard.uncg.edu) - your student identification number is required. If you do not own a computer, the computer labs on campus will be open during this semester.
3. You must have a working e-mail account. Your first assignment will be to update your e-mail address on the course Web site. Instructions are online at [http://blackboard.uncg.edu](http://blackboard.uncg.edu) - you must log in to see the course materials.
4. Because of e-mail viruses, Prof. Nemati does not accept e-mail from unknown sources. Therefore, you must use the subject ISM 675 and your full name typed in the message, or the e-mail may be ignored.
5. It’s impossible for Prof. Nemati to be familiar with every e-mail software application on the market, so please don’t ask for technical assistance.
6. You must check your e-mail account regularly throughout the semester. Official announcements will be made by e-mail, and on the course Web site at [http://blackboard.uncg.edu](http://blackboard.uncg.edu).
7. You are responsible for saving all assignments correctly, so you can turn them in electronically. You should be comfortable using word processing software, and have reasonable keyboarding skills. All assignments will REQUIRE you to use word processing or text editing software. No assignments will be accepted in handwritten form.
8. Supplies: Although you will be publishing (uploading) your assignments, it's a good idea to keep copies of everything.
A note about you and this course

Students learn best in quite different ways. One of the advantages of the online format of the course is that it allows students to approach the course in ways that suit their personal styles and preferences. In classrooms, instructors are inclined to teach either as they themselves were taught, or as they think "the average student" prefers. Online, all of the instructor-presented class material is laid out at once, and students can do with it whatever they prefer in order to learn in as personal and unique a fashion as possible.

To understand how you might learn best and how you might approach the course, it's suggested that you complete a learning style inventory, use the information given to figure and interpret your score, and plan your learning strategy accordingly. Another couple of online tools of this sort are the Keirsey Temperament Questionnaire (http://www.keirsey.com/sorter/register.aspx) and the Keirsey Character Questionnaire (http://www.keirsey.com/).

This course by design specifically accommodates different learning styles by involving a variety of components, including text, video clips, self-check quizzes, reference lists, online discussion, blogs and wikis. Since you are probably used to learning more or less as prescribed or required by a classroom teacher and are not used to designing your own learning strategy, it might take a little time to do that and to settle into a comfortable routine. I think you'll find that as you figure out on your own (and with the help of the online questionnaires mentioned) how to learn the material, everything will fall into place. Online learning, you will find, is quite different than classroom learning. It requires different attitudes, responsibilities, and communication skills.

Emails:

- Always include a subject line.
- Remember without facial expressions some comments may be taken the wrong way. Be careful in wording your emails. Use of emoticons might be helpful in some cases.
- Use standard fonts.
- Do not send large attachments without permission.
- Special formatting such as centering, audio messages, tables, html, etc. should be avoided unless necessary to complete an assignment or other communication.
- Respect the privacy of other class members

Discussion Groups:

- Review the discussion threads thoroughly before entering the discussion. Be a lurker then a discussant.
- Try to maintain threads by using the "Reply" button rather starting a new topic.
- Do not make insulting or inflammatory statements to other members of the discussion group. Be respectful of other’s ideas.
- Be patient and read the comments of other group members thoroughly before entering your remarks.
- Be cooperative with group leaders in completing assigned tasks.
- Be positive and constructive in group discussions.
- Respond in a thoughtful and timely manner.

Chat:

- Introduce yourself to the other learners in the chat session.
- Be polite. Choose your words carefully. Do not use derogatory statements.
- Be concise in responding to others in the chat session.
- Be prepared to open the chat session at the scheduled time.
- Be constructive in your comments and suggestions.
Statement of Students’ Rights and Responsibilities

Note: See the Student Section of the Bryan School website for additional information about “Faculty and Student Guidelines”. http://www.uncg.edu/BAE/faculty_student_guidelines.pdf

Although many items in the above guidelines pertain to face-to-face classes, there are some common items that are true for any class. As a student in my class you have explicit rights and responsibilities. Your full understanding and acceptance of the following rights and responsibilities can lead to more effective learning and more productive use of our time together.

You have the right to expect:

1. Clear statements of course expectations, policies, testing and grading practices and student performance.
2. Your professor to be accessible to discuss assignments or to assist you with course matters.
3. Knowledgeable assistance from your professor regarding class assignments and course content.
4. Professional behaviors reflecting equitable treatment, ethical practices and respect for your rights.
5. Opportunities to challenge ideas and defend your beliefs in a professional manner.
6. To be challenged to grow both academically and professionally. This means I may openly disagree with some responses or comments. Use such exchanges to grow intellectually.
7. Information regarding career opportunities related to ISM programs.
8. Your professor to abide by University policies.
10. Adequate opportunity to appeal any perceived violations of the above rights.

You, as a serious learner, have specific responsibilities to:

1. Plan your study and work schedule appropriately to allow sufficient time to do quality class work. (Please review "Suggested Academic Workload Guidelines" for the Bryan School of Business and Economics published in the UNCG Undergraduate Bulletin and available online.) I suggest you devote about 6-8 hours per week to this course.
2. Complete your assignments by due dates and submit quality work.
3. Understand and follow course in the syllabus.
4. Commit yourself to grow both academically and professionally.
5. Practice ethical behaviors and display respect for rights of others.
6. Contact your instructor and discuss circumstances which may prevent acceptable performance and to make such contact on a timely basis. Contact me by phone if there is an emergency...do so promptly.
7. Fully understand and abide by the UNCG Academic Integrity Policy and other University policies relating to student conduct.
8. Report observed violations of the UNCG Academic Integrity Policy.
## Course Outline

<table>
<thead>
<tr>
<th>Date</th>
<th>Objectives, Readings and Deliverables</th>
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<tbody>
<tr>
<td>Week of Aug 19</td>
<td>Introduction to the Course&lt;br&gt;Introduction to Business Analytics&lt;br&gt;Introduction to Predictive Analytics</td>
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<tr>
<td>Week of Aug 26</td>
<td>Data, Data, Data Everywhere&lt;br&gt;Accessing and Assaying Prepared Data</td>
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<tr>
<td>Week of Sept. 2nd</td>
<td>Business Analytics Basics&lt;br&gt;Predictive Analytics Modeling&lt;br&gt;Explore SAS Enterprise Miner</td>
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<tr>
<td>Week of Sept. 9th</td>
<td>Predictive Analytics Modeling using Decision Trees&lt;br&gt;SAS Book Chapter 3&lt;br&gt;Final Project Part 1 Due on Sept 9th at noon.</td>
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<tr>
<td>Week of Sept. 16th</td>
<td>Predictive Analytics Modeling using Regressions&lt;br&gt;SAS Book Chapter 4&lt;br&gt;EM Assignment 1 Due on Mon. Sept 16th at noon.</td>
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<tr>
<td>Week of Sept. 23rd</td>
<td>Predictive Analytics Modeling using Neural Networks and Other Modeling Tools&lt;br&gt;SAS Book Chapter 5</td>
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<tr>
<td>Week of Sept. 30th</td>
<td>Introduction to BIG DATA Analytics&lt;br&gt;Get ready for your final project&lt;br&gt;Review Enterprise Miner Chapters 1-5</td>
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<tr>
<td>Week of Oct 6th</td>
<td>Predictive Analytics Model Assessment&lt;br&gt;SAS Book Chapter 6</td>
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<td>Week of Oct 14th</td>
<td>Fall Break</td>
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<tr>
<td>Week of Oct 21st</td>
<td>Business Analytics Organizational and Managerial Issues&lt;br&gt;Business Analytics Privacy and Ethical Issues&lt;br&gt;EM Assignment 2 Due on Mon. Oct 21st at noon</td>
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<tr>
<td>Week of Oct 28th</td>
<td>Introduction to Cluster Analysis&lt;br&gt;SAS Book Chapter 8</td>
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<tr>
<td>Week of Nov 4th</td>
<td>Market Basket Analysis&lt;br&gt;SAS Book Chapter 8</td>
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<tr>
<td>Week of Nov 11th</td>
<td>Model Implementation&lt;br&gt;SAS Book Chapter 7&lt;br&gt;EM Assignment 3 Due on Mon. Nov. 11th at noon</td>
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<tr>
<td>Weeks of</td>
<td>Work on Final Projects/ Prepare for Final Exam</td>
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<tr>
<td>Nov. 18-</td>
<td>Final Exam Due on Nov. 25\textsuperscript{th} at noon.</td>
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<tr>
<td>Dec. 2</td>
<td>Final Project Due on Dec. 2\textsuperscript{rd} at noon.</td>
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