Course Overview:

Analytic competency is becoming tremendously important in the business world and is often the factor that distinguishes leading firms in any industry. Companies like Netflix, Marriot International, Capital One and Progressive Insurance have succeeded in their industries mainly due to their distinctive analytic competencies. This course is intended to provide an introductory overview of business analytics, emphasizing how firms implement data-driven decision making. Students will learn statistical concepts as well as an overview of different types of analytics methodologies, use spreadsheet modeling and learn through a mix of lectures, cases, practice problems and class discussion. An important goal of the course is to make students understand and implement fact-based decision making and to enable them to craft “business experiments” in order to make managerial decisions.

Topics include data analysis, sampling, hypothesis testing, regression modeling, experimental design, analysis of variance, text mining, web analytics, and social media analytics.

Case studies and hands-on assignments will introduce students to current business applications and innovative use of these ideas.
Course Objectives:

Specifically the course aims to help you:

- understand the basic foundations of business analytics and vocabulary
- make business decisions based on data by applying hypothesis testing
- develop regression models for predictive analytics
- develop skills to design and perform experiments for gathering data
- articulate big-data analytics features
- understand the concepts underlying text mining, web analytics, retail analytics and social media analytics
- develop hands-on analysis skills to work with data
- apply the concepts in the context of practical business scenarios

Required Course Materials

Required Texts:

**Statistics for Business & Economics, 13th Edition**
David R. Anderson, Dennis J. Sweeney, Thomas A. Williams, Jeffrey D. Camm and James J. Cochran

This book is available in different formats – hard cover, loose leaf, and e-text. Choose the version that works best for you.

**HBR Case Pack (Case Studies and article):**
1. Pilgrim’s Bank (case)
2. Apollo Hospitals (case)
3. Quality Alloys (case)
4. Social Media Analytics (book chapter) - Peer Influence Analysis: Using Social Technologies to Identify Your Business's Most Influential Customers, Josh Bernoff; Ted Schadler

These cases can be purchased from the Harvard Business School Press Coursepack link: http://cb.hbsp.harvard.edu/cbmp/access/74229370

**Articles** (Suggested readings – free access -- available from Rutgers library at libraries.rutgers.edu)

Other readings (articles, chapters, business clippings and web sites) will be assigned regularly. A few of them are indicated here.
   1. Text Mining Supplement.
   2. Web Mining Supplement
   3. Big Data Supplement
   4. CHAID segmentation Supplement
   5. Market Basket Analysis Supplement

Software: The “official” software for the class will be MS Excel (with some add-on programs as required). In an optional module, Students will also be introduced to the “R” Language that is extensively used for data analytics.

Prerequisite:

The material covered in “Quantitative Business Skills” is the prerequisite for this course. Please note that this course is designed as a core course in the MBA program and will assume that all students are comfortable with some of the other MBA core course materials. You should also be comfortable in working with MS Excel.

Class Materials:

All class materials can be obtained via Canvas. Usually, the lecture notes and class discussions will be available in Canvas. Note that the lecture materials for a particular week will be posted at the start of the week. You are strongly encouraged to access the course via Canvas at least 2-3 times a week. You can imagine that the class seamlessly “runs” through from day 1 (Monday) to day 7 (Sunday).

Class Communication:
Since class attendance is not compulsory, a viable and reliable form of communication is vitally important. Note that all class communication will be via your Rutgers e-mail and discussion forums and other tools in Canvas. You are expected to check your Rutgers e-mail at least (equally spaced) two or three times every week. Please keep track of announcements in ‘Announcement’ page in Canvas.

### Email Communication:

Note that during the week, from Monday until Friday, I will try reply to all e-mails within 24 hours, unless I am traveling. Although, I check my e-mails few times a day, I may not be able to completely answer all e-mails immediately upon receiving them. Note that I usually am not be available on weekends and may not be able respond to weekend e-mails until Monday.

### Course Requirements

The requirements for the course follow.

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<tr>
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<th>25 %</th>
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<tbody>
<tr>
<td>Discussion Board</td>
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<tr>
<td>Participation</td>
<td></td>
</tr>
<tr>
<td>Exam 1</td>
<td>25 %</td>
</tr>
<tr>
<td>Exam 2</td>
<td>25 %</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25 %</td>
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</tbody>
</table>

### Discussion Board Activity

There will be several discussion board activities in this course. Discussions may involve any combination of prepared materials, journal articles, textbook readings, minicases, problems, videos, or other resources

During the week of discussion activity, students are expected to create at least one Discussion Thread by Day 5 (Friday) of each week that a discussion topic is assigned and then by Day 7 (Sunday) have responded to at least two other posted thread by other students in the class. All postings including responses are to be substantive and further the discussion of the topic of interest. For some specific situations these general timeframe may be changed, some discussions may even continue over multiple weeks.

Postings on the discussion board must reflect student’s reading and comprehension of the assigned readings and/or related discussion
activity. Discussion postings must reflect the ability to synthesize concepts presented through writing at a college level. The minimum length of a post is 150 words not including references listed.

The discussion boards will close on the specified times, and you will not be able to retroactively participate in discussions.

In addition to these specific assigned discussions, there will be also be a general class forum (Café Analytics) for discussing issues related to the class, but these will not be graded.

A typical rubric for evaluating discussion board activity will be provided in the web site. In evaluating class participation, I emphasize the quality of participation more than quantity. I try to assess how your contributions enhance both the content and process of a discussion:

- do your comments provide new insights?
- do the comments add to our understanding of the issues or is it frivolous?
- are the comments timely and linked to the comments of others?
- are the comments action-oriented or are they simply descriptive statements?
- do the comments move the discussion along by giving a new perspective?
- are the comments clear and concise or obscure and rambling?
- do the comments reflect a concern for maintaining a constructive and comfortable classroom atmosphere?

### Individual Assignments

Homework problems **for practice** will be assigned regularly. They are very helpful in mastering the material and getting comfortable with data analysis.

I expect that there will be about 8 practice homework assignments to be completed by each student **individually**. Most will require some use of MS Excel. These are not graded and there is no need to turn in the assignments.

### Case Studies

Case studies in this course are used as an important part of the readings, discussion and assignments. Where specified, please submit case reports via the appropriate tool in Canvas.

### Exam Policy:

Three **exams** are being planned (to be conducted via Canvas). The format and policy for each exam is roughly expected to be as follows:
Each exam will be available over a 4 day period during the week of the exam and has to be completed by the indicated time. I expect exams 1 and 2 to be available between Thursday, noon and Sunday, 11 pm during the indicated week, and the final exam to be available between noon on May 4th, Friday and, 11 pm on May 7th, Monday. Each exam is designed to be completed in 3 hours or less, in one uninterrupted session. Any student who does not take the exam during this window will receive a zero grade for that exam.

You can take each exam only once. Although available for a length of time, once started, the exam must be completed in one continuous sitting without interruption. That is, do not log out until you have completely finished the exam. Any unanswered question will automatically receive a zero grade for that question. There is no penalty for incorrect answers. Ensure that you have a reliable computer, fully charged battery and reliable internet connection before starting the test. Make sure that your computer meets all the requirements and you configure the browser as suggested. The materials you can refer to will be explicitly specified before each exam.

Exam Make-Up Policy: Since you will be given a very reasonable amount of time to work on the exams, make-ups are not given. If, you cannot take an exam by the scheduled deadline for a university-approved reason, you must give the professor written notice at least one week in advance so that other arrangements can be made. If the situation does not allow for advance notification (for example, emergency hospitalization), contact the professor as soon as possible after a missed exam. Any student who missed the exam without prior approval of the instructor or a compelling reason will receive a zero grade for that exam. The professor reserves the right to request written documentation to support your absence (such as a doctor’s note or military orders).

Grading Policy

Students will be assigned a final grade based on the weighted scored computed using the components indicated above. The final grade will be based very approximately on a normal distribution.

Other Administrative Comments

Student Involvement: You are encouraged and expected to participate continuously in the course. If at any time, you have questions regarding course-related matters, do not hesitate to contact me. If the scheduled office hours are inconvenient for you
and if you want to meet in person, please contact me to arrange an
alternative appointment.

- **Feedback:** I welcome your feedback on the content and style of
the class. You may choose to provide your feedback in person, via
e-mail, or anonymously at any time. Your suggestions will help me
to make the class more useful for everybody.

- **Announcements:** Announcements will be periodically made about
changes in schedules, assignments, exam, readings, project,
policies and other class activities via email and in Canvas. Please
keep abreast of the announcements and changes.

- **Direct Interaction:** Although Canvas provides good learning tools,
often times, a direct one-to-one professional interaction to resolve
difficult issues is usually the most effective. For example, you may
have a certain technical/mathematical problem that is frustratingly
difficult to solve and may not be resolved in open forums or
elsewhere. In this case, please feel free to send me an e-mail and a
contact number so that I can call you directly to resolve it. I will
also be able to meet with you personally, if there is a need for it. I
also expect to use the on-line collaborative tools for office hours.

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**Academic Integrity:**

“Academic integrity requires that all academic work be wholly the product of an
identified individual or individuals. Joint efforts are only legitimate when the
assistance of others is explicitly acknowledged…. The principals of academic
integrity entail simple standards of honesty and truth. Each member of the
university has a responsibility to uphold the standards of the community and to
take action when others violate them…. Students are responsible for knowing
what the standards are and for adhering to them. Students should also bring any
violations of which they are aware to the attention of their instructors.”
(Rutgers University Code of Academic Conduct,
http://studentconduct.rutgers.edu/university-code-of-student-conduct) and

Students are expected to know, understand and adhere to the
policies on academic integrity outlined above. Procedures for
violation of these policies outlined in the University Code of
Academic Conduct will be followed. In all cases, you are
responsible for preparing and entering your own work and properly
referencing the work of others. Cheating, plagiarism, and other
types of misconduct are not acceptable. Penalties can include
expulsion from the University. For the policy on Academic Integrity
please see: http://academicintegrity.rutgers.edu/policy-on-academic-integrity.
You are free to discuss any part of the course materials with your classmates. However, you are not allowed to discuss (i.e., receive nor give any assistance on) any part of the exams with anyone. If any cheating is found, the most severe sanctions available will be sought.

**Support Services:**

The School of Business welcomes persons with disabilities to all its classes, programs, and events. Students seeking an accommodation because of a disability may go to [http://learn.camden.rutgers.edu/disability/disabilities.html](http://learn.camden.rutgers.edu/disability/disabilities.html) or they can contact the Camden campus Disability Coordinator, Mr. Tim Pure at 856-225-6442, Armitage Hall Room 362, available via e-mail at [disabilityservices@camden.rutgers.edu](mailto:disabilityservices@camden.rutgers.edu).
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<tr>
<th>Modul</th>
<th>Date</th>
<th>Material</th>
<th>Reading</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Jan 16 – Jan 21</td>
<td>Data analysis &amp; probability distributions review</td>
<td>Chapters 1-3 (prerequisites) Article #1</td>
</tr>
<tr>
<td>2</td>
<td>Jan 22 – Jan 28</td>
<td>Data analysis &amp; probability review continued</td>
<td>Chapter 4-6 (prerequisites)</td>
</tr>
<tr>
<td>3</td>
<td>Jan 29 – Feb 4</td>
<td>Sampling &amp; Interval Estimation</td>
<td>Chapters 7, 8</td>
</tr>
<tr>
<td>4</td>
<td>Feb 5 – Feb 11</td>
<td>Hypothesis testing</td>
<td>Chapter 9 Case: Pilgrim Bank</td>
</tr>
<tr>
<td>5</td>
<td>Feb 12 – Feb 18</td>
<td>Hypothesis testing, Customer Analytics</td>
<td>Chapters 10 Case: Pilgrim Bank (cont’d)</td>
</tr>
<tr>
<td>6</td>
<td>Feb 19 – Feb 25</td>
<td>Exam 1</td>
<td>All materials from weeks 1-5 Due on Feb 25</td>
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<tr>
<td>7</td>
<td>Feb 26 – Mar 4</td>
<td>Regression modeling I</td>
<td>Chapter 14</td>
</tr>
<tr>
<td>8</td>
<td>Mar 5 – Mar 11</td>
<td>Regression modeling II</td>
<td>Chapters 15 &amp; 16</td>
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<td>Mar 12 – Mar 18</td>
<td>Spring Break</td>
<td></td>
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<tr>
<td>9</td>
<td>Mar 19 – Mar 25</td>
<td>Logistic Regression Text Mining</td>
<td>Chapter 15 Case: Appollo Hospital Text mining supplement.</td>
</tr>
<tr>
<td>10</td>
<td>Mar 26 – Apr 1</td>
<td>Exam 2</td>
<td>All materials from Weeks 7-10 Due on Apr 1</td>
</tr>
<tr>
<td>11</td>
<td>Apr 2 – Apr 8</td>
<td>Experimental Design, Analysis of Variance, Applications</td>
<td>Chapter 13 Articles #2, #3</td>
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<tr>
<td>12</td>
<td>Apr 9 – Apr 15</td>
<td>Web Analytics, Big Data</td>
<td>Case: Quality Alloy Big Data supplement, Web mining supplement</td>
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<tr>
<td>13</td>
<td>Apr 16 – Apr 22</td>
<td>Segmentation, Talent Analytics, Retail Analytics</td>
<td>CHAID supplement, Article #4, Market Basket Analysis supplement</td>
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<tr>
<td>14</td>
<td>Apr 23 – Apr 29</td>
<td>Social Media Analytics Information Security</td>
<td>Casepack: Peer Influence Analysis - Bernoff, Schadler Article #5</td>
</tr>
<tr>
<td>15/16</td>
<td>Apr 30 – May 7</td>
<td>Review, Reading Days</td>
<td>Final Exam Due on May 7</td>
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Note: Changes may be made to this tentative course outline as needed.