“Data Science Strategy & Leadership”

Course Code: DSB6000
Class Schedule: Saturdays 9:00am to 12:25pm, from 08/30/17 to 11/15/17
Semester/Year: Fall Term 2017

Faculty Contact Information
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Office hours: 
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Course Description

This course will provide the students with an understanding of how organizations can leverage data science and analytics to gain competitive advantage and how to use the data to align with a company’s mission and goals. Students will learn how organizations derive business value/impact, and return on investment, and the importance of interpreting and communicating the business case.

This course provides an introduction to the use of big data as a strategic resource with an understanding of how companies can leverage data analytics to gain strategic advantage. We stress the factors that impact data management and the analysis methods that have value to them. Through better use of data, organizations are able to plan and enact strategies with greater clarity and confidence. Data is a value point that drives increased organizational efficiency and a competitive advantage. Organizations, for example, Microsoft, IBM, Google, and Amazon are investing heavily in technologies and techniques to help organizations makes sense of, and unlock the value within, big data. Further, business analytics can help organizations successfully cope with rapidly changing business environments by collecting relevant data and analyzing such accumulated big data. Thus, Business Analytics (BA) is a useful strategy for organizations to become analytical competitors who can sense and respond to market opportunities and threats in a timely fashion and achieve competitive advantage.

This course addresses the strategic management of enterprise analytics. It provides a broad perspective to the role and importance of analytics to business. A focus is on pursuing “analytics that matter;” those that are associated with sustainable competitive advantage. Topics covered and cases analyzed will address evaluating, strategically aligning, planning for and directing investments in, governance of, processes for and continuous renewal of analytics deployments in business. The course reinforces the role of analytics for decision support in enabling sound personal decision-making and for creating and maintaining an enterprise-level culture of evidence/fact-based decision making. A project management perspective to deploying analytics will address ethical issues surrounding customer data analytics. The course will also cover data and predictive model ownership issues, enterprise-level support for experiment-based innovation, embedding analytics in business processes and enterprise performance management as it relates to the analytics function in an organization.
### Course Objectives

1. Understand how organizations can use data to align with their mission and goals
2. Understand the role of data science in organizational strategy and how organizations can leverage information to gain competitive advantage.
3. **Understand the challenges of data driven businesses – how can organizations start to use their data to deliver actionable business insight.**
4. Gain an introductory knowledge of data science tools and new technologies tools that are useful in extracting intelligence and value from data needed to solve next generation data challenges.
5. Identify the application of data science tools to reveal business opportunities and threats.
6. Identify the challenges posed by the ability to scale and the constraints of today's computing platforms and algorithms.

### Instructional Method

Many of the topics in this course are often best understood through experiential learning. A case approach is used to emphasize hands-on learning and real-world view of big data analytics. This course will be complemented by lectures, seminar style discussion and outside speakers. Students will be introduced to several topics and tools with emphasis (through cases and projects) on how to use them to generate firm value.

Some cases will involve the entire class discussing a situation while others will be team-based. The teams for the exercises and cases will be randomly assigned by the instructor. The exercise/case team assignments will rotate three times during the semester to give students multiple opportunities to work with as many other participants with different strengths and backgrounds as possible on the various cases.

### Texts


Data Smart: Using Data Science to Transform Information into Insight [Paperback] John W. Foreman

### Readings


"A different game: Information is transforming traditional businesses," The Economist, Feb 25, 2010


“Driven by Data: The Importance of Building a Culture of Fact-Based Decision-Making,” SAS Publishing

**Tentative Schedule of Topics**

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tr>
<td>1</td>
<td>Introduction</td>
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<td>2</td>
<td>Data Science drivers and concepts</td>
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<td>3</td>
<td>How organizations use Data Science</td>
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<td>4</td>
<td>Strategic management of enterprise analytics</td>
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<td>5</td>
<td>Translating analysis into effective organizational decision-making</td>
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<td>6</td>
<td>Data Science Tools and Techniques</td>
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<td>7</td>
<td>Formulating a data strategy as business leaders</td>
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<td>8</td>
<td>Understanding the Big Data Value Creation Drivers</td>
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<td>9</td>
<td>Analytic Innovation</td>
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<td>10</td>
<td>Human + Machine Learning: How to work together and communicate effectively</td>
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<tr>
<td>11</td>
<td>Group Project Presentations</td>
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**Evaluation Criteria**

- Case Analysis 60%
- Project: 40%
Religious holidays (from the online Academic Calendar): Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

Student Disabilities Services

(Edited statement from the SDS web site): If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located in the Adamany Undergraduate Library. The SDS telephone number is 313-577-1851 or 313-202-4216 (Videophone use only). Once your accommodation is in place, someone can meet with you privately to discuss your special needs. Student Disability Services' mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.

Students who are registered with Student Disability Services and who are eligible for alternate testing accommodations such as extended test time and/or a distraction-reduced environment should present the required test permit to the professor at least one week in advance of the exam. Federal law requires that a student registered with SDS is entitled to the reasonable accommodations specified in the student's accommodation letter, which might include allowing the student to take the final exam on a day different than the rest of the class.

Academic Dishonesty -- Plagiarism and Cheating (edited statement from the DOSO's web site):

Academic misbehavior means any activity that tends to compromise the academic integrity of the institution or subvert the education process. All forms of academic misbehavior are prohibited at Wayne State University, as outlined in the Student Code of Conduct (http://www.doso.wayne.edu/student-conduct-services.html). Students who commit or assist in committing dishonest acts are subject to downgrading (to a failing grade for the test, paper, or other course-related activity in question, or for the entire course) and/or additional sanctions as described in the Student Code of Conduct.

Cheating: Intentionally using or attempting to use, or intentionally providing or attempting to provide, unauthorized materials, information or assistance in any academic exercise. Examples include: (a) copying from another student’s test paper; (b) allowing another student to copy from a test paper; (c) using unauthorized material such as a “cheat sheet” during an exam.

Fabrication: Intentional and unauthorized falsification of any information or citation. Examples include: (a) citation of information not taken from the source indicated; (b) listing sources in a bibliography not used in a research paper.

Plagiarism: To take and use another’s words or ideas as one’s own. Examples include: (a) failure to use appropriate referencing when using the words or ideas of other persons; (b) altering the language, paraphrasing, omitting, rearranging, or forming new combinations of words in an attempt to make the thoughts of another appear as your own.

Other forms of academic misbehavior include, but are not limited to: (a) unauthorized use of resources, or any attempt to limit another student’s access to educational resources, or any attempt to alter equipment so as to lead to an incorrect answer for subsequent users; (b) enlisting the assistance of a substitute in the taking of examinations; (c) violating course rules as defined in the course syllabus or other written information provided to the student; (d) selling, buying or stealing all or part of an un-administered test or answers to the test; (e) changing or altering a grade on a test or other academic grade records.
**Course Drops and Withdrawals:** In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Pipeline. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: [http://reg.wayne.edu/pdf-policies/students.pdf](http://reg.wayne.edu/pdf-policies/students.pdf)

**Student services**

The Academic Success Center (1600 Undergraduate Library) assists students with content in select courses and in strengthening study skills. Visit [www.success.wayne.edu](http://www.success.wayne.edu) for schedules and information on study skills workshops, tutoring and supplemental instruction (primarily in 1000 and 2000 level courses).

The Writing Center is located on the 2nd floor of the Undergraduate Library and provides individual tutoring consultations free of charge. Visit [http://clasweb.clas.wayne.edu/writing](http://clasweb.clas.wayne.edu/writing) to obtain information on tutors, appointments, and the type of help they can provide.

**Class recordings:** Students need prior written permission from the instructor before recording any portion of this class. If permission is granted, the audio and/or video recording is to be used only for the student’s personal instructional use. Such recordings are not intended for a wider public audience, such as postings to the internet or sharing with others. Students registered with Student Disabilities Services (SDS) who wish to record class materials must present their specific accommodation to the instructor, who will subsequently comply with the request unless there is some specific reason why s/he cannot, such as discussion of confidential or protected information.