**CIS 315 - Introduction to Business Data Analytics**

Spring 2015 – Class Section 25816

**Professor:** Yili (Kevin) Hong, Ph.D. **Office Hours:**

Tempe Office: BA 319G Tempe – Mondays 2:00pm – 3:00pm

**Phone:** 480-727-4003 Tempe – Wednesdays 2:00pm – 3:00pm

**Email:** hong@asu.edu

***Note:*** *when you make an appointment via email, please kindly add* **[CIS 315]** *to the subject line of the email. This will allow me to respond to your email faster.*

# The Class and Logistics

**When and where:** Mondays/Wednesdays 3:00 – 4:15 PM at Tempe BAC-9

**First day of classes:** Monday, Jan 12, 2015

**Last day of classes:** Wednesday, April 29, 2015

**Final exam:** TBD

**Days with no classes:** Monday, Jan 19, 2015 (MLK Day)

Monday, March 9, 2015 (Spring Break)

Wednesday, March 11, 2015 (Spring Break)

**Required Readings:**

Slides for each class will be posted to the blackboard before class.

**Optional Reading:**

Nate Silver, *The Signal and the Noise: Why So Many Predictions Fail — but Some Don't*

**Other Materials:**

Articles, blogs, videos and other topical material – accessed from links on Blackboard

**Purchasing the Case Study:**

We will be using the Harvard Case Study “Slots, Tables, and All that Jazz: Managing Customer Profitability at the MGM Grand Hotel” (Product number: 106029-PDF-ENG). The case can be purchased directly through the Harvard Business School Publishing site.A custom URL that offers special rate for students of this class on Harvard Publishing Site is <https://cb.hbsp.harvard.edu/cbmp/access/32429953>

Make sure you use that posted URL and double-check to make sure you are ordering the correct case. You will need to register in order to purchase the case.

# Course Objectives and Learning Outcomes

Students enrolled in CIS 315 will study the fundamental building blocks of business data analytics, including:

* Learning how analytics are used today in society and in business
* Learning how to develop critical and logical thinking skills through the design and implementation of data analytics solutions for real-world applications.
* Applying various types and classes of analytics to different classes of business needs and challenges
* Surveying different types of enabling technologies that are used to deliver analytics to business decision-makers and other knowledge workers
* Studying how various forms of business data are organized and categorized in support of analytics
* Demonstrating collection and organization of data, as well as the ability to sort truth from distraction
* Studying beginning modeling techniques that are used to transform raw data into high-value, high-impact business analytics
* Understanding how interpreting data is a critical factor in decision making.
* Understanding how to find meaningful patterns within data and be able to draw conclusions from the patterns
* Understanding how businesses can utilize advanced analytical techniques to predict likely outcomes from the patterns in data

Students will also prepare for the follow-on courses in the *Business Data Analytics* program track that will build on the content of CIS 315.

**W. P. Carey School of Business Learning Goals**

The Undergraduate Program of the W.P. Carey School of Business has established the following learning goals for its graduates:

1. **Critical Thinking**
2. **Communication**
3. **Discipline Specific Knowledge**
4. **Ethical Awareness and Reasoning**
5. Global Awareness

**Computing/Software**

This course requires the use of SAS Enterprise Miner, which is a Java-enabled program. Students need have Java 7 installed and the computer needs to be brought to class in some of the sessions (if the class is not held in a computer equipped lab). Java 7 is available in both Windows and Max OS systems.

# Course Structure and Schedule

The content of CIS 315, *Introduction to Business Data Analytics*, is organized into five modules, as listed in the table below.

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| **Module** | **Theme** |
| 1 | **Introduction to Business Analytics** |
| 2 | **Data Modeling** |
| 3 | **ETL and Data Cleansing** |
| 4 | **Business Analytics Models (Theory and Practice)** |
| 5 | **Data Visualization** |

The specific classes throughout the semester for each of the above modules, along with the reading assignments for each class, are listed in the table that follows. The content of any individual class is subject to change, and your instructor will give you advance notice of any changes including reading assignments and quiz/test dates.

Throughout the semester several classes will include individual or group in-class exercises, with the objective of reinforcing lecture material. Assignments and supporting material for these exercises will be posted separately on Blackboard and/or handed out in class.

| **Class #/Date** | **Topic** | **Assigned Reading/Assignments** | **Assignment** |
| --- | --- | --- | --- |
| 1 – Mon. 1/12 | Course Introduction and Syllabus  The things you can do with data. | PowerPoint: Introduction |  |
| 2 – Wed. 1/14 | The Information Architecture of an Organization | PowerPoint: Information Architecture of An Organization |  |
| 3 – Mon. 1/19 | **No class – MLK Day** |  |  |
| 4 – Wed. 1/21 | Knowing what you want to be: | PowerPoint: Data Scientist  “Evaluating the Data Scientist Job Description”  http://insidebigdata.com/2013/10/13/evaluating-data-scientist-job-description/ |  |
| 5 – Mon. 1/26 | Data Modeling - Introduction and gathering requirements  In-class exercise: Gathering requirements | PowerPoint: Relational Data Modeling  Analytics: Money Ball and Sports Analytics: https://marketing.wharton.upenn.edu/files/?whdmsaction=public:main.file&fileID=3926 |  |
| 6 – Wed. 1/28 | Data Modeling – Picturing Requirements  (The Entity Relationship Diagram) | PowerPoint: Relational Data Modeling |  |
| 7 – Mon. 2/2 | Data Modeling – Implementing the ERD  (tables, schemas, normalization) | PowerPoint: Relational Data Modeling  Analytics: Super bowl |  |
| 8 – Wed. 2/4 | In-class exercise:  Creating an Entity Relationship Diagram | Discussion group project format.  Analytics: Mobile review analytics. |  |
| 9 – Mon. 2/9 | ***Quiz 1: MGM Case*** (5 points)  Case Study: MGM Case  Discussion: How to gain an advantage in the gaming industry? | MGM Case  SAS Report: Casino Analytics: http://support.sas.com/resources/papers/proceedings11/379-2011.pdf | Assignment 1 Due: ER Modeling  (5 points) |
| 10 – Wed. 2/11 | ***Quiz 2: ER Diagram*** (10 points)  A Brief Review of Database Management Systems | PowerPoint: A Brief Review of Database Management Systems |  |
| 11 – Mon. 2/16 | Turning transaction data into analytical data: Overview of the Dimensional Model  The structure of the Dimensional Model: The Star Schema | PowerPoint: Dimensional Modeling |  |
| 12 – Wed. 2/18 | In-class exercise: Planning a star schema based on a transactional database |  |  |
| 13 – Mon. 2/23 | Working with Dimensional Data:  Pivot Tables in Excel  In-class exercise: Pivot Tables in Excel | PowerPoint: An Excel Functions Primer |  |
| 14 – Wed. 2/25 | Getting data into the warehouse and cube:  The Extract, Transform, Load process  Data quality: Best practices, data cleansing, and integration | PowerPoint: ETL |  |
| 15 – Mon. 3/2 | In-class exercise: ETL |  |  |
| 16 – Wed. 3/4 | Review for mid-term |  | Assignment 2 Due: Pivot Tables in Excel  (5 points) |
| 17 – Mon. 3/9 | Spring Break! | | |
| 18 – Wed. 3/11 |
| 19 – Mon. 3/16 | **Exam #1 (mid-term)** (25 points) |  |  |
| 20 – Wed. 3/18 | Analytics Schools of Thoughts (Experimental vs. observational; prediction vs. causation) | PowerPoint: Analytics Schools of Thoughts  https://www.youtube.com/watch?v=2OnduwEujlk | Assignment 3 Due: ETL (5 points)  First Milestone of the Group Project due (Research question, Introduction) |
| 21 – Mon. 3/23 | Introduction to Analytical Models and Methods | PowerPoint: Introduction to Analytical Models and Methods |  |
| 22 – Wed. 3/25 | Overview of SAS Enterprise Miner: Preparing Data for Analysis | PDF: Instructions - Creating SAS OnDemand Account |  |
| 23 – Mon. 3/30 | In-class exercise: Getting familiar with SAS Enterprise Miner |  |  |
| 24 – Wed. 4/1 | Decision Tree Analysis | PowerPoint: Decision Tree Analysis |  |
| 25 – Mon. 4/6 | Decision Tree (in-class exercise) |  | Second Milestone of the Group Project due (Research question, Introduction, Literature Review) |
| 26 – Wed. 4/8 | Clustering Analysis | PowerPoint: Clustering Analysis |  |
| 27 – Mon. 4/13 | Clustering (in-class exercise) |  |  |
| 28 – Wed. 4/15 | Association Rules Analysis | PowerPoint: Association Rules Analysis | Assignment 4 Due: Intro to SAS  (5 points) |
| 29 – Mon. 4/20 | Association Rules (in-class exercise) |  |  |
| 30 – Wed. 4/22 | Data Visualization | PowerPoint: Data Visualization | Third Milestone of the Group Project due (Research question, Introduction, Literature Review, Research Methods) |
| 30 – Mon. 4/27 | Data Visualization (in-class exercise) |  |  |
| 30 – Wed. 4/29 | Review for final exam |  |  |
| Wed. 5/6 | No class (**final exam** week)  (25 points) | **Final Exam: 12:10 – 2:00 PM** | Group Project Due (15 points) |

Assignments

There will be four assignments. They are to be done individually and should represent your own work. If you need help, you may consult with your instructor or the tutors. Late assignments will receive a penalty of 10% \* days. Assignments late for more than a week will receive zero.

|  |  |  |
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| **#** | **Assignment** | **Due** |
| 1 | ER Modeling | February 9 |
| 2 | Working with Pivot Tables in Excel | March 4 |
| 3 | Extract, Transform, Load (ETL) | March 18 |
| 4 | SAS #1 – Introduction to working with SAS | April 15 |

**Evaluation and Grading**

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| |  |  | | --- | --- | | Exams (2) | 25+25=50% | | Case Quiz (2) | 5+10=15% | | Assignments (4) | 5 points X4=20% | | Group Project | 15% |   **Grading Scale**   |  |  | | --- | --- | | Grade | Percentage | | A+ | 97 or higher | | A | 93 to 96.99 | | A- | 90 to 92.99 | | B+ | 87 to 89.99 | | B | 83 to 86.99 | | B- | 80 to 82.99 | | C+ | 77 to 79.99 | | C | 70 to 76.99 | | D | 60 to 69.99 | | E | Below 60 | |  |

**Extra credit Opportunities:**

* **1 points** for official Department of Information Systems Club (DISC) membership, meeting Department’s minimum official membership criteria (i.e., number of events and meetings attended, etc.)
* TBD

# Classroom, Department, College, and University Policies

## Textbooks and Materials

It is considered a violation of academic integrity to utilize course materials that are illegally sourced. Please ensure that you are ordering and paying for your own materials as outlined in the ordering instructions.

## Academic Integrity and Ethical Behavior

The W. P. Carey School takes academic integrity very seriously. Therefore, unless otherwise specified (for example, a group project), it is imperative that you do your own work on assignments, quizzes, and examinations. Any suspected violations of academic integrity will be taken seriously and may result in the following sanctions:

* A minimum of zero on the assignment OR
* A reduced grade in the course OR
* A failure in the course OR
* An XE which denotes failure due to academic dishonesty on the transcript OR
* Removal from the W. P. Carey School of Business

Additional information on ASU’s academic integrity policy may be found at <http://provost.asu.edu/academicintegrity>

## Honor Code

Please download and sign a copy of the WP Carey Honor Code, found on the “Course Info” page. **You must submit a signed copy to your instructor by the end of the first week of class**.

You may also find a copy of the Honor Code to download and sign at the following link:

<https://my.wpcarey.asu.edu/academic-integrity/upload/Undergraduate-Honor-Code.pdf>

## Attendance and Absence Policies

Students are expected to attend each and every class session that is held. No-class days due to ASU holidays are listed on the syllabus and in the class-by-class schedule.

In the event you are absent due to illness, transportation difficulties, personal situations, or other reasons please contact your instructor as soon as possible to let me know. If you are unexpectedly absent on a class day in which a quiz or exam is given then a make-up quiz or exam date and time needs to be scheduled for as soon as possible after that date. If you know in advance that you will be absent on a quiz or exam day, contact your instructor to schedule a make-up date and time either before or after the scheduled day.

## Religious Accommodations

Accommodations will be made for students with religious holidays. Below is the calendar of official religious holidays. Each holiday noted with two asterisks denotes an observance for which work is not allowed. For these holidays, students will not be penalized in any way for missing class or assignment. This means that this will not count as an absence in class and they will be granted a makeup assignment or exam, etc.

<https://provost.asu.edu/index.php?q=religious-holiday-calendar>

## University-Sanctioned Activities

Accommodations will be made for students who miss class related to university-sanctioned activities according to ACD 304-02. If you are participating in a university-sanctioned activity, please let your instructor know as early in the course as possible so that accommodations can be made.

## Tutoring Support

Please note that the W. P. Carey School of Business provides free tutoring in BA 201 for a number of undergraduate business classes. Assistance with writing is also provided.

More information regarding courses offered and hours are available here: <https://my.wpcarey.asu.edu/undergrad/student-success/success-center.cfm>?

In addition to the W. P. Carey Student Success Center, Arizona State University provides writing assistance through multiple platforms.

## Threatening Behavior Policy

The university takes threatening behavior very seriously and these situations will be handled in accordance with the Student Services Manual, SSM 102-02 <http://www.asu.edu/aad/manuals/ssm/ssm104-02.html>

## Disability Accommodations

If you need an accommodation for a disability, you must register with the Disability Resource Center (DRC). Please contact your instructor for assistance with DRC registration if you are unfamiliar with this process or have any issues doing so.

# Student Computing Support

The following is a list of available resources to students in the event of various types of computing issues, including Blackboard support. You may also contact your instructor for assistance on all matters.

* Online support and assistance: [http://my.asu.edu/service](http://my.asu.edu/service" \t "_blank) (also has buttons for phone and online chat support)
* Blackboard Help for Students: [http://asu.force.com/kb/articles/Informational/Blackboard-Help-for-Students/](http://asu.force.com/kb/articles/Informational/Blackboard-Help-for-Students/" \t "_blank)
* Blackboard Test Survival Guide: [http://asu.force.com/kb/articles/Informational/Blackboard-Test-Survival-Guide/](http://asu.force.com/kb/articles/Informational/Blackboard-Test-Survival-Guide/" \t "_blank)
* ASU Email Guide: [http://asu.force.com/kb/articles/Informational/ASU-Email-Guide/](http://asu.force.com/kb/articles/Informational/ASU-Email-Guide/" \t "_blank)
* ASU Wireless Network: [http://asu.force.com/kb/articles/How\_To/How-to-Connect-to-ASU-s-Network/](http://asu.force.com/kb/articles/How_To/How-to-Connect-to-ASU-s-Network/" \t "_blank)

**Drop deadline: January 18, 2015**

This is the last day to drop this class without receiving a grade of 'W' on your transcript.

**Course withdrawal deadline: April 5, 2015**

This is the last day to withdraw from this class while staying enrolled in other classes in the same session. After this date, a withdrawal from this class is only available as part of a complete session withdrawal (see below).

**Complete session withdrawal deadline: May 1, 2015**

This is the last day to request a complete withdrawal from this session. As part of a complete withdrawal you must withdraw from all of your classes in this session. Beginning the first day of the fall and spring semesters, undergraduate students are required to work with their college/school to facilitate the withdrawal process.

**Note:** Due to the potential diverse background and varied preparedness of the student body, the instructor reserves the right to make modifications to the syllabus.