

# MIS 0855 Fall 2016 – Data Science *Week 1 – Introduction*

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## Fighting Crimes with Data (1/2)

- What does she mean by “fighting a crime is all about information?”
  - What information?
  - Specifically, what information did NYPD use to catch “Sugar”?
- What does it mean by “connecting the dots”?



<http://www.tomchaveslaw.com/wrongful-arrest-civil-rights-violations/>

## Fighting Crimes with Data (2/2)

- What if NYPD does not have the real-time crime information? How would or should its detectives solve the crimes?
  - Would it be effective?
- Where can NYPD get information they need for crime-solving?



<http://www.tomchaveslaw.com/wrongful-arrest-civil-rights-violations/>

## Why Information?

- What kind of information do we need?
- Why do we need information at all?
- Without information, what would happen?



<http://www.blackcareerzone.com/>  
<http://www.bankingsense.com/buying-a-house-5-great-tips-for-getting-a-great-deal/>



# Who will win the presidency?

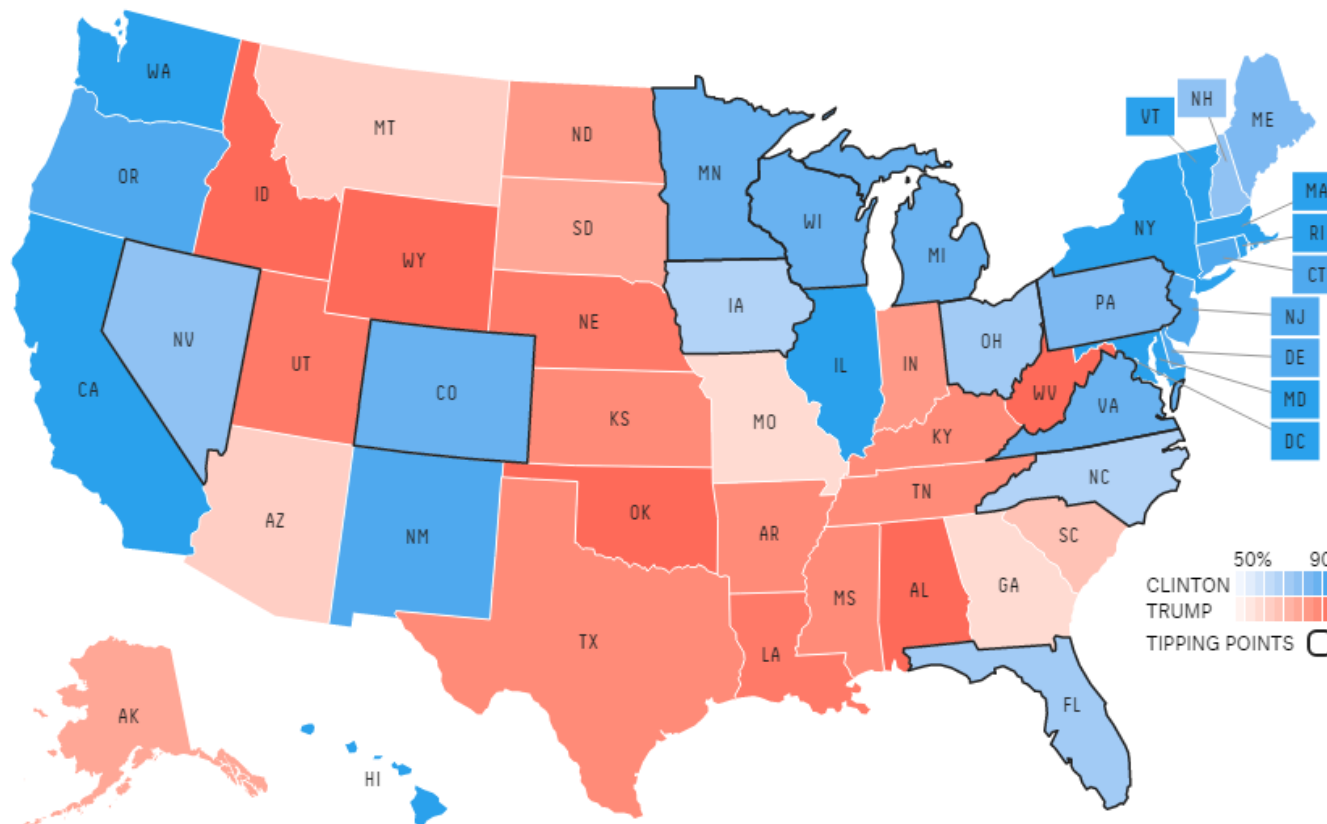


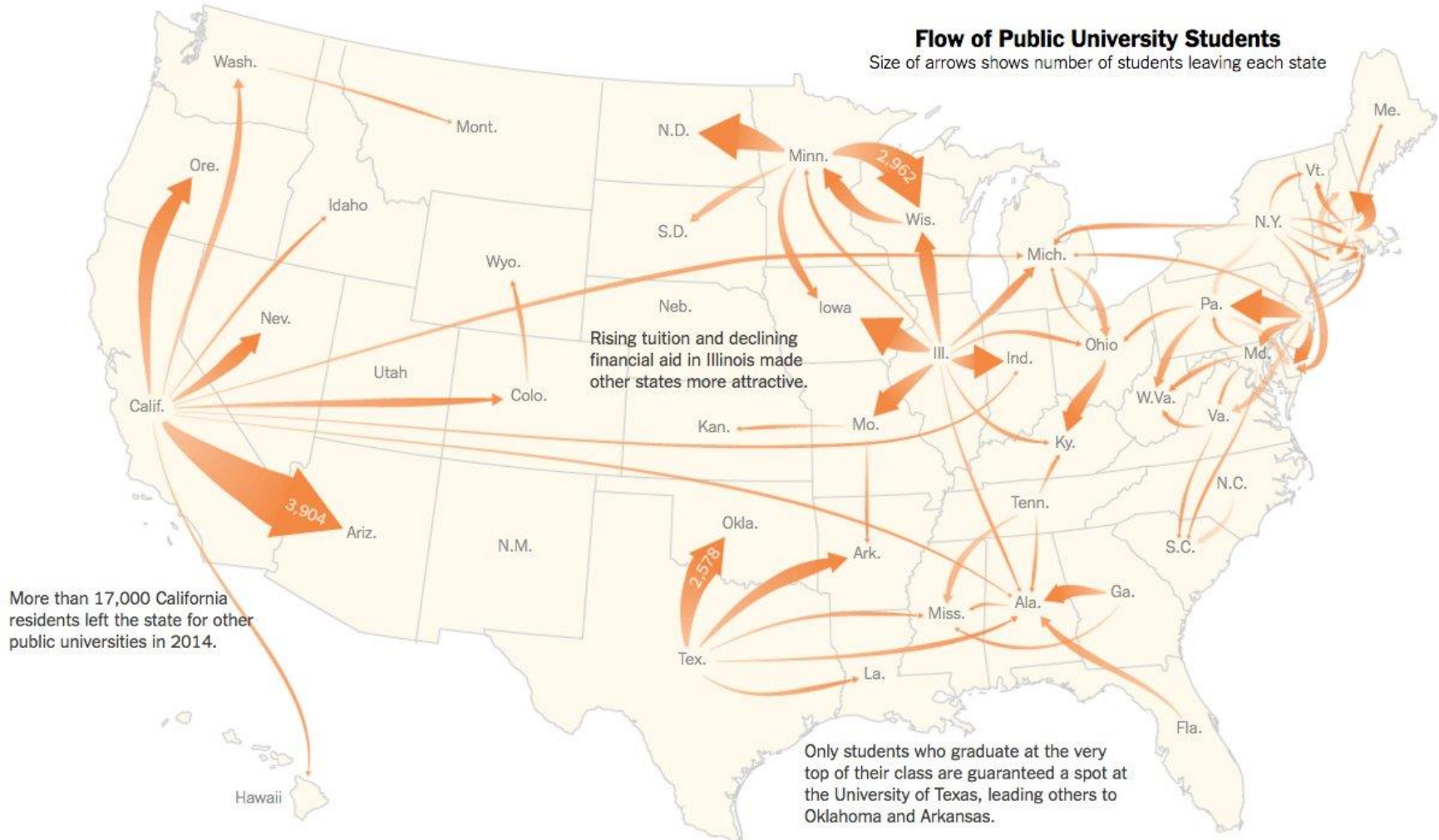
## Chance of winning



Hillary Clinton  
**83.0%**

Donald Trump  
**16.9%**





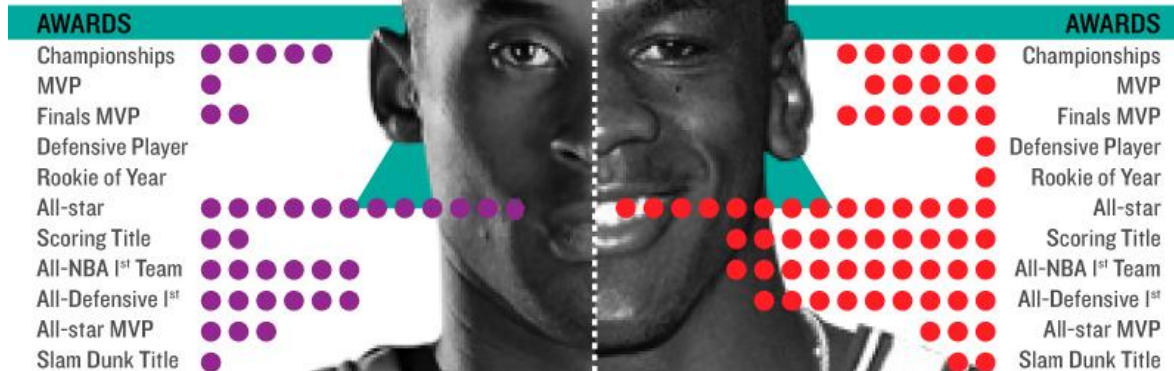
# THE GREATEST OF ALL TIME:

## KOBE BRYANT

### VS.

## MICHAEL JORDAN

In the basketball blogosphere, it's highly debated if Kobe can ever be considered as good as MJ, who is currently considered the greatest of all time. Have a look at how the players compare:

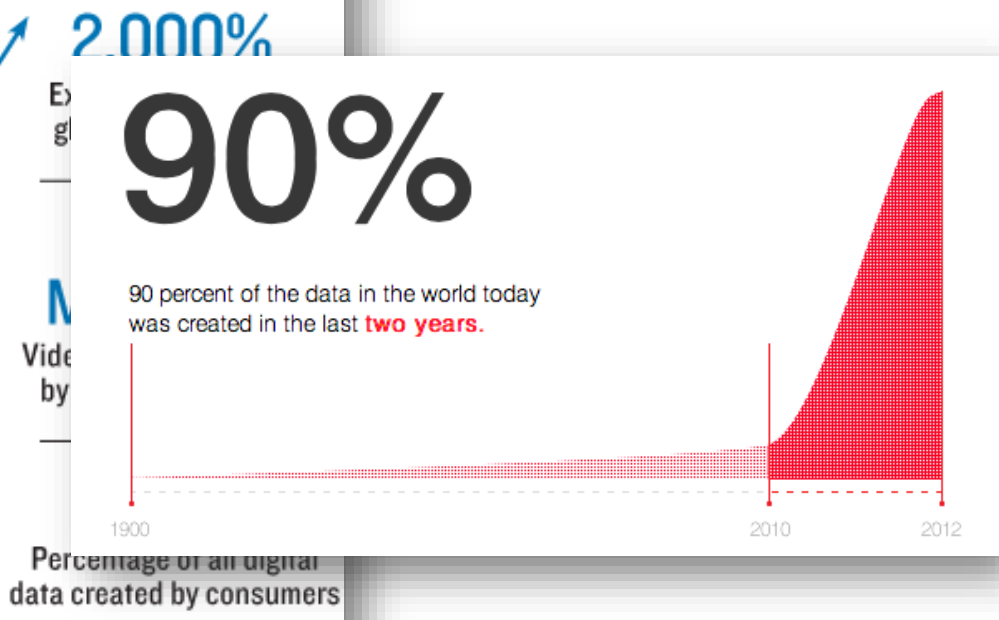
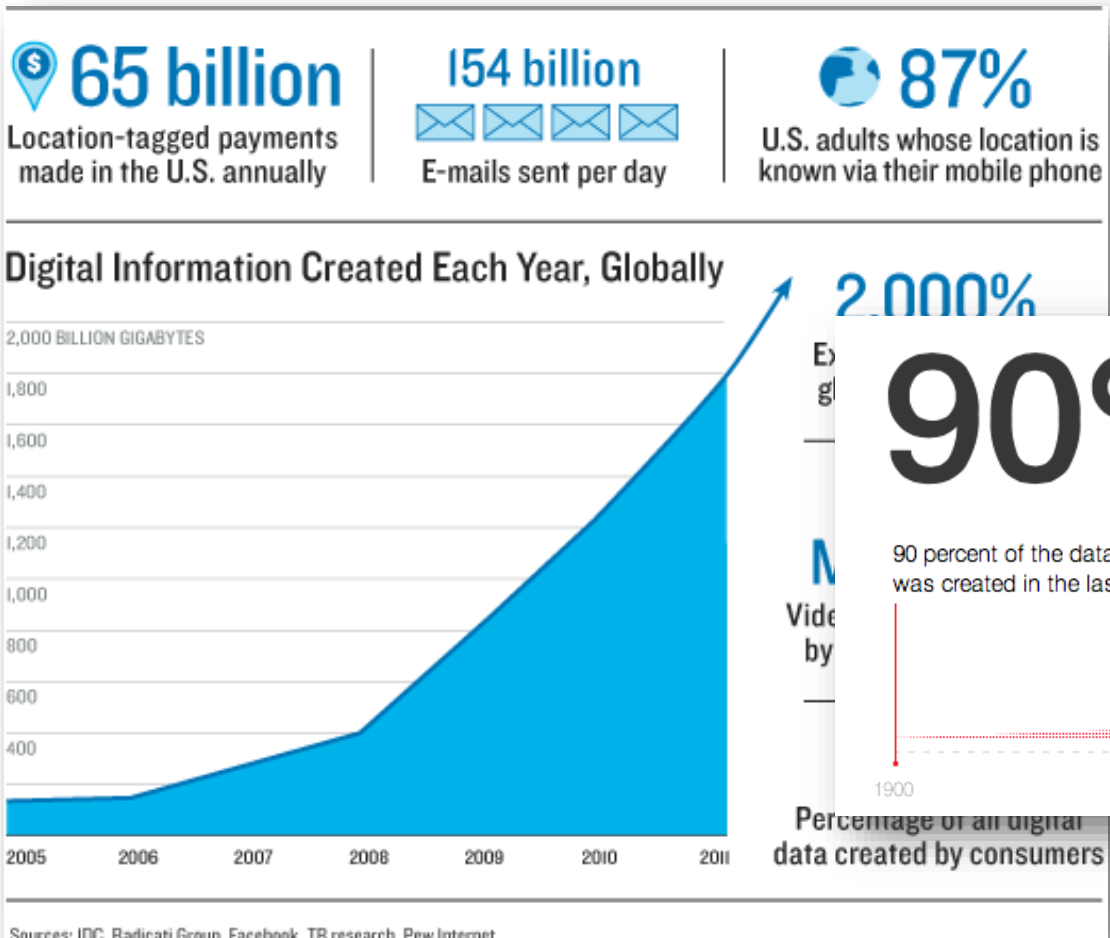


\* - ONE AWARD. \*BRYANT'S CAREER IS STILL IN PROGRESS. IMAGES: greyflannelauctions.com | nike.com | nba.com | mcdonalds.com | nutellausa.com | spalding.com | upperdeck.com | cocacola.com | facebook.com | aol.com | finashline.com | nbc.com | palm.com | gatorade.com | sportsauthority.com | hanes.com | championusa.com | footlocker.com | espn.com SOURCES: thehoopdoctors.com | bleacherreport.com | Wikipedia | Forbes. ILLUSTRATION: saravienna.com Information provided by www.medicalinsurance.org

**MEDICAL** Insurance



# Data is Exploding!



<http://www.klcommunications.com/blog/anonymity-in-a-big-data-world/>  
<https://www.novell.com/events/data-governance-webinars/>

## ANALYTICS

# Data Scientist: The Sexiest Job of the 21st Century

by **Thomas H. Davenport** and **D.J. Patil**

FROM THE OCTOBER 2012 ISSUE

## Calling All Number Crunchers

In a survey, more than 1,000 executives rated obstacles to implementing a big-data strategy

**Security 51%**



**Budget 47%**



**Lack of talent 41%**



**Integration with existing systems 35%**



**Limited options from vendors 33%**



DATA: ACCENTURE

<https://hbr.org/2012/10/data-scientist-the-sexiest-job-of-the-21st-century/>  
<http://www.bloomberg.com/news/articles/2015-06-04/help-wanted-black-belts-in-data>

# Data Scientist

<b>ROLES</b>	Data scientist, business analyst, Chief Data Officer, analytics manager, DevOps
<b>MINIMUM EDUCATION</b>	Master's degree recommended
<b>RELEVANT AREAS OF STUDY</b>	Statistics, analytics, mathematics, computer science, engineering, physics
<b>TECHNOLOGY SKILLS</b>	Data analytics, algorithms, neural networks, machine learning, artificial intelligence
<b>POTENTIAL COMPANIES TO WORK FOR</b>	Academia, healthcare, SMBs, large enterprises, PR/Advertising/Marketing agencies, research firms, technology companies, manufacturing, retail.
<b>NATIONAL MEDIAN SALARY</b>	<b>\$93,146</b>

## Big Data, Big Paycheck

Median salary for analytics professionals and those specifically within data science, by level of experience.



Note: Data do not include managers Source: Burtch Works

The Wall Street Journal

<http://www.cio.com/article/3057574/careers-staffing/it-career-roadmap-data-scientist.html>

<http://www.wsj.com/articles/SB10001424052702304819004579489541746990638>

## Course Goal (1/2)

- After taking this course, you are expected to be able to
- Make sense of the world through data
  - Select the right data
  - Prepare the data for analysis
  - Derive insights and knowledge that are useful for decision making
  - Communicate analyses and insights via visualization

## Course Goal (2/2)

- After taking this course, you are expected to be able to
- Be able to “do it” by
  - Hands-on work with real tools (Tableau Desktop, Piktochart, Excel)
  - Retrieve the real-world data and clean them
  - Analyze and visualize the data with tools

## Schedule (1/3, subject to change)

Week	Date	Topic
1	Sep-01	Introduction Data and Science
2	Sep-08	Data and Metadata In Data We (Mis)Trust
3	Sep-15	Introduction to Tableau (I)
4	Sep-22	Introduction to Tableau (II) Viewing Data
5	Sep-29	Visualizing Data (I) Exam #1 Review
6	Oct-06	Exam #1 Storytelling with Infographics

## Schedule (2/3, subject to change)

Week	Date	Topic
7	Oct-13	Visualizing Data (II)
8	Oct-20	Dirty Data Data Cleansing
9	Oct-27	Choosing Relevant Data Key Performance Indicators Exam #2 Review
10	Nov-03	Exam #2 Creating Interactive Dashboards
11	Nov-10	Beyond Numbers Twitter Sentiment Analysis

## Schedule (3/3, subject to change)

Week	Date	Topic
12	Nov-17	Integrating Data Aggregating Data
	Nov-24	Thanksgiving Day (No Class)
13	Dec-01	Predicting the Future Predictive Analytics Using Tableau
14	Dec-08	Data Science and Your Career Exam #3 Review
	Dec-15	Exam #3



## Evaluation

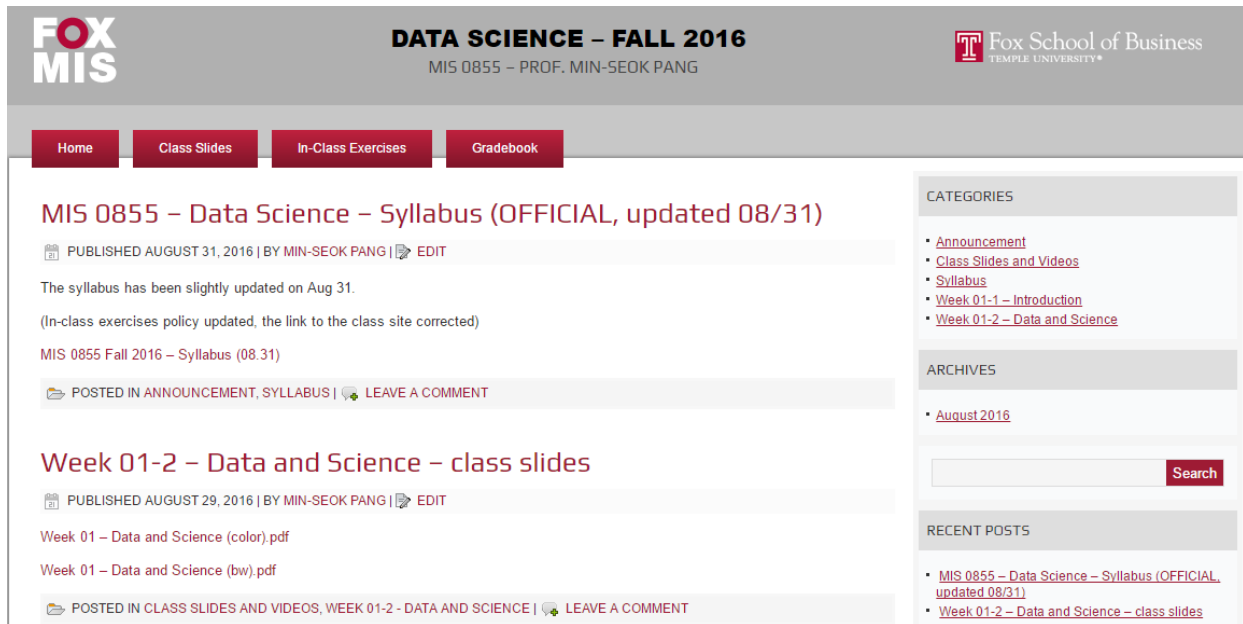
Assignments #1 - #4	35%
Assignment #5 (Term Project)	10%
Three Exams	45%
In-Class Exercise	10%

94% - 100%	A	73% - 76.99%	C
90% - 93.99%	A-	70% - 72.99%	C-
87% - 89.99%	B+	67% - 69.99%	D+
83% - 86.99%	B	63% - 66.99%	D
80% - 82.99%	B-	60% - 62.99%	D-
77% - 79.99%	C+	< 60%	F

## Assignments (45%)

#	Assignment	Due Date
1	Create a Data Analysis Plan	Fri, Sep 16
2	Analyze a Data Set Using Tableau	Mon, Sep 26
3	Analytics Challenge	Mon, Oct 31
4	Cleaning a Data Set	Mon, Nov 14
5	Group Data Analysis (Term Project)	Fri, Dec 9

# Class Site at MIS Community



The screenshot shows a web page for the "DATA SCIENCE – FALL 2016" class, taught by Prof. Min-Seok Pang. The page features a navigation menu with "Home", "Class Slides", "In-Class Exercises", and "Gradebook". The main content area displays two posts: "MIS 0855 – Data Science – Syllabus (OFFICIAL, updated 08/31)" and "Week 01-2 – Data and Science – class slides". The syllabus post includes a publication date of August 31, 2016, and a link to the syllabus. The class slides post includes a publication date of August 29, 2016, and links to two PDF files: "Week 01 – Data and Science (color).pdf" and "Week 01 – Data and Science (bw).pdf". The right sidebar contains sections for "CATEGORIES", "ARCHIVES", and "RECENT POSTS".

- <http://community.mis.temple.edu/mis0855sec005fall16/>
- All class materials, announcements, and grades will be posted here.
- Blackboard is only for assignment submission.

## Software Tools to Use

- Tableau Desktop 9.3 (A free education copy will be provided.)
- Microsoft Excel
- Piktochart (We will use a free version.)
- A basic-level of skills in Excel is desired.

# Academic Integrity

- ZERO TOLERANCE
- Plagiarizing others' work without references will be reported to the University immediately.
- If deliverables submitted by multiple students are suspected to be work of one single person, the instructor will report to the University as a cheating.
- DO NOT SHARE ANY FILE THAT YOU CREATE WITH ANYONE.

## Three Exams (15% each)

- Oct 6, Nov, 3 and Dec 15 (tentative)
- Based on readings, class slides, in-class exercises, and assignments
- Closed-books-closed-notes
- Exam #2 is not cumulative. Exam #3 covers the whole course.
- Consist of multiple-choices and short-answer questions
- Review sessions before the exams

## In-Class Exercises (10%)

- There will be one or two in-class exercises (either group or individual) every week.
- All in-class exercises will be counted toward the grade.
- Deliverables from in-class exercises will be graded by success or fail.
- Up to three missing in-class exercises will be excused.
  - Use this opportunity only if it is necessary!

## Class Policies (1/2)

- Keep monitoring announcements at the class site.
- Using laptops or tablets is allowed only for class-related activities.
  - Should close laptops while the instructor plays a video.
- Please use @temple.edu account for all correspondents with the instructor. Email messages sent from a non-Temple account may not be responded.



## Class Policies (2/2)

- Please turn off or mute cell phones. Do not send emails, texts, or tweets during class.
- In case of severe weather, we will meet as long as the University is open.