Breaking Intuition: How Data has Changed Human Perception (Fall 2015, INTR 100)

Schedule
Gold Section (CRN 14603): M, W - 12PM to 12:50PM, *Morton Hall 244*
Green Section (CRN 14604): M, W - 1PM to 1:50PM, *Morton Hall 244*
Both Sections : Friday, 12:00PM to 12:50PM, *Morton Hall 220*

Instructors

Dr. **Dan** Runfola	Dr. Tyler Frazier
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Office Hours: TBD	TBD
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Teaching Assistants
Name: TBD
Office: TBD
Office Hours: TBD
Number: TBD

Please let me know if you have any documented disabilities that may impact your performance in this class.

Course Description: The human species has nearly always sought to predict the future from reading the clouds and sacrificial rites, to statistics and big data parsing. At the core of this history lies human intuition, and the interplay between belief, story, and knowledge. In this class, students will learn the fundamental ways in which the human species has used data over time from arcane interpretation to artificial intelligence and closely inspect modern day assumptions about intuition and meaning. As a part of this course, students will learn how to parse and visualize large datasets to extract meaning, and use those findings to argue for or against solutions to real-world problems.

Prerequisite(s): None.
Credit Hours: 4

Books you'll need to buy:
Thinking, Fast and Slow, any edition

Daniel Kahneman

Automate This: How Algorithms Came to Rule Our World, any edition
Christopher Steiner

Media available for free:

The Beauty of Data Visualization - David McCandless
The Best Stats Youve Ever Seen - Hans Rosling
The Rise of Human-Computer Cooperation - Shyam Sankar
Do schools kill creativity? - Ken Robinson
The Hidden Influence of Social Networks - Nicholas Christakis
Tableau Public - Online Software
R and RStudio - Free Software for Download
LibreOffice, Google Sheets, or Microsoft Excel

Throughout the course I may assign readings from academic or popular journals these will be made available through either the Swem library or online via blackboard.

Course Objectives:

1. Challenge students traditional assumptions about the production of knowledge.
2. Provide a more critical understanding of scientific literature.
3. Develop your data communication, analysis, and visualization skills for future courses (and jobs).
4. Develop critical thinking skills necessary to become more responsible for your own learning and better engage with broadly defined challenges.
5. Provide an opportunity to fulfill the COLL 100 requirement (passing grade required).

Grade Distribution:

Lab Assignments	80%
Final Assignment	20%

Letter Grade Distribution:

>= 93.00	A	73.00 - 76.99	C
90.00 - 92.99	A-	70.00 - 72.99	C-
87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	B	63.00 - 66.99	D
80.00 - 82.99	B-	60.00 - 62.99	D-
77.00 - 79.99	C+	<= 59.99	F

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Time Commitment: Excelling in college level course work typically requires on average three to four hours per credit per week. Since this is a four credit course, in addition to the time we meet as a class each week, you should expect to spend nine to twelve hours on average reading, writing, or otherwise preparing for this class on a weekly basis.

Attendance: This class does not have an attendance policy. However, it will be difficult to learn enough to pass the class without regular participation, as the majority of course content relevant to tests and assignments will be covered in class. Unannounced opportunities for extra credit will periodically be given in-class.

Discussions: Most lecture sessions will begin with a brief discussion of the assigned materials. As such, each week students will be asked to come to class prepared with two to three bullet points for discussion - these can represent questions the material raised, commentary, or critiques. These discussion points may be collected for extra credit.

Classroom Behavior: Please remain civil during discussions to promote the open exchange of ideas and foster a culture of open dialogue. Please bear in mind that all students are entitled to their own opinion. You are expected to listen attentively to each person speaking. Please refrain from eating during class (and, if you must, make sure it isn't loud!).

Teacher-student conferences: Students performing at a C level or below are required to schedule a meeting with the instructor to discuss class performance.

Late / Poor Performance Policy: Assignments will not be accepted late, excepting in documented circumstances (i.e., an illness with a doctor's note). *Recognizing that it is entirely possible to underperform on key days, your lowest lab assignment grade will be dropped at the end of the semester.*

Final Project: The final project will be introduced the last week of classes, and will be due on the last day of finals (**December 16, 2015**). In this project, you will be assigned an open-ended question, and be asked to present a two to five page argument (including visualizations drawn from datasets) for why a certain course of action should - or should not - be taken. Example questions might include providing quantitative evidence for why you are taking the courses you have selected - or plan to select - in the next semester; contrasting the income-earning or happiness-generating potential of your planned major; or considering the likely geographic destinations for a given career path.

Do not cheat!

Academic dishonesty is taken very seriously. Make sure to cite all of your work, and do not turn in work that is not yours! Cases of academic dishonesty will be evaluated and acted upon in accordance with William and Mary policies, which can be found at http://www.wm.edu/offices/deanofstudents/services/ student-conduct/

Course Outline:
The weekly content might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

Week	Content
Week 1	- Wed, 8/26: Intro Lab - William and Mary - Fri, 8/28 - Lecture 1.0 - Preparing to be wrong *Watch: Ken Robinson - Do schools kill creativity?*
Week 2	- Mon, 8/31; Wed, 9/2: Lab 1.0 - The basics I - Fri, 9/4: Lecture 2.0 - What is Intuition? *Reading: Thinking Fast and Slow, Chapter 1 - The characters of the story*
Week 3	- Mon, 9/7; Wed, 9/9: Lab 1.1 - The basics II - Fri, 9/11: Lecture 3.0 - Storytelling and Knowledge *Thinking Fast and Slow, Chapter 6 - Norms, Surprises and Causes* **Lab 1 due!**
Week 4	- Mon, 9/14; Wed, 9/16: Lab 2.0 - Deus ex machina? Considering Machine Learning I - Fri, 9/18: Lecture 4.0 - The History of Modern Intuition *Reading: Automate This: How Algorithms Came to Rule Our World*
Week 5	- Mon, 9/21; Wed, 9/23: Lab 2.1 - Deus ex machina? Considering Machine Learning II **Fri, 9/25: Lecture 5.0: Guest Lecturer TBD** **Lab 2 due!**
Week 6	- Mon, 9/28; Wed, 9/30: Lab 3.0 - Modeling the Market - Fri, 10/2: Lecture 6.0 -The meaning of Big Data *Automate This: How Algorithms Came to Rule Our World, Chapter 1: Wall Street, the First Domino*
Week 7	- Mon, 10/5; Wed, 10/7: Lab 3.1 - Modeling the Market - Fri, 10/9: Lecture 7.0: Dr. David Murray, Business Analytics
Week 8	- Mon, 10/12: No Class (Fall Break) - Wed, 10/14: Lab 3.2 - Creating Powerful Visualizations - Fri, 10/16: Lecture 8.0: Data Visualization: Perception and Knowledge *The Beauty of Data Visualization - David McCandless* **Lab 3 due!**
Week 9	- Mon, 10/19; Wed 10/21: Lab 4.0 - Data Processing and Social Data I - Fri, 10/23: Lecture 9.0: Applications of Knowledge *The Hidden Influence of Social Networks - Nicholas Christakis*
Week 10	- Mon, 10/26; Wed 10/28: Lab 4.1 - Data Processing and Social Data II - Fri, 10/30: Lecture 10.0: Jaime Settle - The Power of Social Networks **Lab 4 due!**
Week 11	- Mon, 11/2; Wed 11/4: Lab 5.0 - Maps and Cities I - Fri, 11/6: Lecture 11.0: Why we're generally wrong *Thinking, Fast and Slow - Chapter 18: Taming Intuitive Predictions*
Week 12	- Mon, 11/9; Wed 11/11: Lab 5.1 - Maps and Cities II - Fri, 11/13: Lecture 12.0: Eric Sanderson *Watch: Eric Sanderson: New York – before the City* **Lab 5 due!**
Week 13	- Mon, 11/16; Wed 11/18: Lab 6.0 - Digging into the Past Using Data I **Fri, 11/20: Lecture 13.0: Final Guest Lecture**
Week 14	- Mon, 11/23: Lab 6.1 - Digging into the Past Using Data II - Wed, 11/15; Fri, 11/27 - No Class (Thanksgiving Break)
Week 15	- Mon, 11/30, Wed 12/2: Final Project Introduction and Work Time **(Due 12/16)** - Fri, 12/4: Lecture 14.0: Breaking Intuition *Thinking, Fast and Slow - Chapter 36: Life as a Story;* *Automate This - Chapter 10 - The Future* **Lab 6 due!**