



## Data Driven Decisionmaking (Fall 2015, INTR 490 (COLL 200))

### Schedule

Monday, Wednesday, and Friday 11AM to 11:50AM *Morton Hall 20*

### Instructors

Dr. <b>Dan</b> Runfola	Dr. Tyler Frazier
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427 Scotland Street	427 Scotland Street
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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:** For the increasing volume of information being produced to be useful in decision-making processes, it needs to be systematically organized and analyzed. This course will provide students with an opportunity to apply quantitative methods to a wide variety of real-world problems defined by decision makers from federal and international policy making groups. Course work will include applying a wide set of techniques (such as the analytic hierarchy process, ordered weighting averaging) which integrate human preferences and perception with quantitative information, with an emphasis on uncertainty. Students will learn about and consider the challenges associated with data reduction how to balance between the limits of human perception, the value of additional information, and temporal constraints imposed by the decision making process.

**Prerequisite(s):** None.

**Credit Hours:** 3

**Books you'll need to buy:**

None, though 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. Provide students with a critical understanding of the decision making process and the use of data and intuition on short deadlines.
2. Develop students ability to communicate findings, analysis, and visualization skills for future courses (and jobs).
3. Expose students to real-world problems that are being engaged with by contemporary problem solvers and decision makers.
4. Provide an opportunity to earn credit towards the COLL 200 requirement in the Natural World and Quantitative Reasoning domain (passing grade required).

### Grade Distribution:

Lab Assignments	50%
Final Assignment	30%
Reading Assignments	20%

### Letter Grade Distribution:

$\geq 93.00$	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+	$\leq 59.99$	F

**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 the culmination of your work in the second half of the semester, and will include both a written report and verbal presentation. Final presentations will begin the final week of the course, and finish on the day of finals.

## Do not cheat!

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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/](http://www.wm.edu/offices/deanofstudents/services/student-conduct/)

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### Course Outline:

The course outline can be found on the following two pages. The weekly content might change as it depends on the progress of the class.

Week	Content
Week 1	<ul style="list-style-type: none"> <li>• 8/26 - Lecture; 8/28 - Hands On Learning</li> <li>• Data Applications in Decisionmaking: A History I</li> <li>• Reading: <i>A Primer for Policy Analysis, Ch. 3- Decision Making by Organizations: Choosing the Right Tools.</i></li> <li>• Assignment 1: Basic Skills I: What you'll have to know.</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• 8/31 - Lecture; 9/2 and 9/4 - Hands On Learning</li> <li>• Data Applications in Decisionmaking: A History II</li> <li>• Reading: <i>Can Selfishness Save the Environment? The Atlantic Monthly, Available online</i></li> <li>• Assignment 1: Basic Skills II: What you'll have to know.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• 9/7 - Lecture; 9/9 and 9/11 - Hands On Learning</li> <li>• Challenge I: US Army Corps</li> <li>• Reading: <i>Temporal and spatial changes in social vulnerability to natural hazards - Susan Cutter</i></li> <li>• Assignment 2: Working with Data: Figuring out what's wrong.</li> <li>• <b>"Basic Skills" Lab due by midnight on 9/11!</b></li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• 9/14 - Lecture; 9/16 and 9/18 - Hands On Learning</li> <li>• Challenge I: Getting the Data</li> <li>• Reading: <i>Vrsmarty, C., P. McIntyre, et al. (2010). "Global threats to human water security and river biodiversity." Nature 467(7315): 555-561.</i></li> <li>• Assignment 2: Working with Data: Doing it right.</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>• 9/21 - Lecture; 9/23 and 9/25 - Hands On Learning</li> <li>• Challenge I: Understanding the Data</li> <li>• Reading: <i>Chapter 15 in: Decision Analysis for Management Judgment: Second Edition, Goodwin and Wright, The Analytical Hierarchy Process.</i></li> <li>• Mid-Term Assignment [3]: Implementing the AHP Working with Decisionmakers to make sense of data.</li> <li>• <b>Assignment 2 (Working with Data) due by midnight on 9/25!</b></li> </ul>
Week 6	<ul style="list-style-type: none"> <li>• 9/28 - Lecture; 9/30 and 10/2 - Hands On Learning</li> <li>• Challenge I: Analyzing the Data</li> <li>• Reading: <i>Clark, G., S. Moser, et al. (1998). "Assessing the vulnerability of coastal communities to extreme storms: the case of Revere, MA., USA." Mitigation and Adaptation Strategies for Global Change 3(1): 59-82</i></li> <li>• Mid-Term Assignment [3]: Data Reduction: Drawing Inferences from lots of data</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>• 10/5 - Lecture; 10/7 and 10/9 - Hands On Learning</li> <li>• Challenge I: Making the Case</li> <li>• Reading: <i>Visualizing ourselves with crowd-sourced data Aaron Koblin</i></li> <li>• No Assignment this week; preparation for mid-term (assignment 3) presentations.</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>• 10/12 - No Class (Fall Break); 10/14 and 10/16 - Presentations.</li> <li>• <b>Midterm Presentations and accompanying report (i.e. Assignment 3) due by midnight on Sunday, 10/11!</b></li> <li>• Reading: <i>NA</i></li> <li>• <i>NA</i></li> </ul>

Week	Content
Week 9	<ul style="list-style-type: none"> <li>• 10/19 - Lecture; 10/21 and 10/23 - Hands On Learning. Selecting a Challenge and Forming Groups</li> <li>• Reading: <i>Student-Selected</i></li> <li>• Finding Data: Where do I start looking?</li> </ul>
Week 10	<ul style="list-style-type: none"> <li>• 10/26 - <b>Guest Lecture</b>; 10/28 and 10/30 - Hands On Learning.</li> <li>• Challenge II: Getting the Data (Ready)</li> <li>• Reading: <i>Student-Selected</i></li> <li>• Working with Data: Cleaning up!</li> <li>• <b>Reading summaries of at least one academic article on your topic of interest due by midnight on Friday, 10/30 (reading assignment 1)!</b></li> </ul>
Week 11	<ul style="list-style-type: none"> <li>• 11/2 - <b>Guest Lecture</b>; 11/4 and 11/6 - Hands On Learning.</li> <li>• Challenge II: Getting the Data (Ready)</li> <li>• Reading: <i>Student-Selected</i></li> <li>• Working with Data: Cleaning up!</li> <li>• <b>Dataset Due for your topic of interest by midnight on 11/6! (Counts as a lab assignment!)</b></li> </ul>
Week 12	<ul style="list-style-type: none"> <li>• 11/9 - <b>Guest Lecture</b>; 11/11 and 11/13 - Hands On Learning.</li> <li>• Challenge II: Getting the Data Part 2</li> <li>• Reading: <i>Student-Selected</i></li> <li>• Working with Data: Getting ready for Analyses</li> <li>• <b>Reading summaries of at least one academic article on your topic of interest due by midnight on Friday, 11/13 (reading assignment 2)!</b></li> </ul>
Week 13	<ul style="list-style-type: none"> <li>• 11/16 - <b>Guest Lecture</b>; 11/18 and 11/20 - Hands On Learning.</li> <li>• Challenge II: Analyzing the Data</li> <li>• Reading: <i>Student-Selected</i></li> <li>• Working with Data: Running the Analysis</li> <li>• <b>First draft powerpoint presentation due (counts as a lab assignment!)</b></li> </ul>
Week 14	<ul style="list-style-type: none"> <li>• 11/23 - Hands On Learning; 11/25 and 11/27 - No Class (Thanksgiving)</li> <li>• Challenge II: Analyzing the Data</li> <li>• Working with Data: Building Visualizations</li> <li>• <b>Reading summaries of at least one academic article on your topic of interest due by midnight on Monday, 11/23 (reading assignment 3)!</b></li> </ul>
Week 15	<ul style="list-style-type: none"> <li>• 11/30, 12/2, 12/4 - Final Presentations</li> </ul>