Directed Graduate Studies 793R

The following outlines our current thoughts on the goals and deliverables of the 793R course. This document will be updated as the course progresses to better help us reach our research goals, but the outline here will give us clear ideas for minimum requirements for credit and a starting point for future discussions.

The reading assigned in the table below will be tracked, and is required for credit. The presenter will plan a 30-minute, interactive presentation based on the previous week's topics, which will hopefully incite lots of discussion and questions more than a 50 minute monologue. Each of the first 6 weeks refers to two of the lectures found at http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-041sc-probabilistic-systems-analysis-and-applied-probability-fall-2013/index.htm, (week 1 has lectures 1 and 2, week 2 has lectures 3 and 4 etc.). These lectures, in conjunction with the textbook: *Introduction to Probability.* 2nd ed. (available on the public shelf in the office) and Lemon's book *Introduction to stochastic Processes in Physics* (available digitally through the Harold B. Lee Library) will provide reading and practice materials for weeks 1-6, and further reading from these books and other sources will round out the course.

Week	**Topic**	**Chapter in Lemons' book due**	**Textbook sections due**	**Presenter**
1	intro			
2	Probability Models and Axioms/Conditioning and Bayes' Rule	none	1.1-1.4	Troy
3	Independence/Counting	1	1.5-1.6	Alex
4	Discrete Random Variables: PMFs and Moments	2	2.1-2.6	Andrew
5	Multiple Discrete Random Variables/Continuous Random Variables	3	2.6-2.7 3.1-3.3	Troy
6	Multiple Continuous Random Variables and Continuous Bayes' Rule	4	3.4-3.6 4.1	Alex
7	Convolution, Covariance, and Iterated expectation	5	4.1-4.5	Andrew
8	To be determined			
9				
10				
11				

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The final will consist of a project that will at a minimum apply the principles we have learned in a simple code, and if at all possible will extend to a plan/preliminary code for applying the broader principles to research models.

Required Assignments:

1. An average of 8 hours of work per week
2. Weekly reading
3. Presentations (9:00 a.m. on Tuesdays in FB 209B, ~30 minutes + discussion)
4. A probability glossary defining important terms and concepts
5. A final project consisting simple code executing modern techniques for data or model analysis
6. A broader plan and preliminary code for direct application to research