Class Meeting: **T** & **Th** in Heg 201   Email: haggard@bard.edu
Lab Meeting: **Th** in Heg 107   Office: Rose 112
Office Hours: **TBD**   Office Phone: (845) 758-7302

Course Description — *Learning about learning: a quantitative study of the evolution of the self*
What is learning? How can we learn more quickly? What happens in our brains when we learn? This course will tackle an experimental investigation of what influences the depth and quality of our learning. We will take a synthetic look at the psychology, philosophy, and cognitive science of learning, reading books such as Tim Ferriss' *Four Hour Chef* and Daniel Kahneman's *Thinking, Fast and Slow*. A major focus of the course will be student-generated, quantitative experiments designed to test ideas about learning. A succinct motto that will inform our approach is "It costs very little to find out," that is, we will aim to test ideas by trying them. This course will challenge you to take a more active role in choosing how you go about learning. No mathematics background will be assumed for the course.

Goals:

- For you to experience autonomy and claim ownership over your learning processes. There are the goals that a professor sets for a course, but unless an individual sets their own goals for that course they are less likely to extract as much as they could.

- I would like to give an unintimidating introduction to probability as a tool. There is a wonderful microcosm of learning within the realm of games of chance and the art of forecasting known as Bayes' rule. We will explore these ideas fully.

- I am astounded by how many people feel themselves to be outsiders to science and mathematics. I aim for you to feel empowerment around using scientific approaches to investigate questions and answers in your own lives.

- To reflect on discrepancies between your experience of the utility of an activity and the reflection of that utility in data and vice versa.

- For you to pick up a few tools of use to you in the lifetime practice of learning.

Homework — I will grade homework on a 0-5 scale. These scores mean roughly the following: 5=clear and complete solution, 4=good solution missing one conceptual point or calculation, 3=clear attempt but with substantive flaw, 2=effort made but incomplete plan, 1=little effort, 0=nothing appearing. I care most about the effort you invest and you can receive credit on this basis. The goal of the homework is for us to engage each other in a discussion of the course material regularly, please come and visit as often as you like to discuss. Along these lines, I recommend that you work together; this is invaluable in learning. Please write things up yourself to show me and you that you understand it (this helps battle the illusion of explanatory depth, which we will discuss). Please do not use the internet as a resource for anything but definitions.

Grading Structure

Homework	25%
Labs	25%
Attendance	10%
Quizzes	5%
In-class exam	15%
Take home exam	20%

Take home — This will be an unlimited time, open-book exam. You can study as much as you like using any resource up to opening the exam. However, once you have opened the exam I ask that you only refer to your class notes. I ask that you honor your peers and the effort that we all put into the class by not referencing any outside materials.

Course website: http://bohr.physics.berkeley.edu/hal/teaching/sci127Fa16/

Week	Topics	Lab
8/29	Stories & Storytelling	M & M's
9/5	Self Experimentation	Cooking
9/12	Time Use & Goal Setting	Time Use
9/19	Cognitive Biases	Self Experiment 1.1
9/26	Reasoning amidst uncertainty & Bayes rule	Self Experiment 1.2
10/3	Memory	Memory
10/10	*(Fall break MT)* Explanatory Depth	In-class Exam
10/17	Metacognition	Problem Solving
10/24	Expert Performance	Self Experiment 2.1
10/31	Grit & Affect	**No Lab**
11/7	Learning Styles, Science, & Learning	Self Experiment 2.2
11/14	Forecasting & Feedback	Forecasting Lab
11/21	History of Education *(Thanksgiving ThF)*	**No Lab**
11/28	Philosophy & Learning	Epistemology
12/5	How can we use science to learn? *(Advising Day W)*	Cooking 2
12/12	*Completion days begin*	

Note: I reserve the right to adjust this syllabus during the semester

Quizzes — Sporadic brief (10-15min) quizzes will help you keep track of what you should know and the few things you should memorize.

Lateness and Other Anomalies — Late work will be accepted before I have graded the assignment with a 20% deduction on the graded score. After work has been graded I will no longer accept late work. If you tell me about something ahead of time, almost any situation can be accommodated.

Texts to purchase: *Made to Stick*, by C. Heath and D. Heath.
How We Learn: The Surprising Truth About When, Where, and Why It Happens B. Carey.

Additional Texts we will draw from:
The Happiness Advantage: The Seven Principles of Positive Psychology That Fuel Success and Performance at Work S. Achor
Predictably Irrational D. Ariely
Make it Stick: The Science of Successful Learning, P. C. Brown
Mindset C. Dweck
Grit: The Power of Passion and Perseverance A. Duckworth
The Road To Excellence: the Acquisition of Expert Performance in the Arts and Sciences, Sports,

and Games, by K. A. Ericsson (Psychology Press, 2014)
Four Hour Chef, T. Ferriss
Moonwalking with Einstein, J. Foer
Succeed H. Grant Halverson
Thinking Fast and Slow, D. Kahneman
The First 20 Hours, Josh Kaufmam
Smart Thinking, A. Markman
Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School, J. Medina
Deep Work, C. Newport
A Mind for Numbers: How to Excel at Math and Science, Barbara Oakley
Fluent Forever, Gabriel Wyner
On Writing Well, W. Zinsser

I have read over this syllabus. I commit to stick to the parameters of the take home exam.

Signed: Date: