Junction 2013 Seminar Classes, Week 2

The Culture Industry   Amy

What do two dead German scholars who were exiled by Nazis and living in the United States have to do with Kim Kardashian? Turns out, more than you'd expect. We'll spent a little bit of time talking about the post WWII consumer society and its legacy before diving headfirst into one of Adorno and Horkheimer's papers. While knowledge of Kim Kardashian and reality television is required, basic knowledge of Marxist theory and psychoanalytic theory, and history will make this class particularly exciting to you, but that background is not required.

Molecular Malfunction   Elizabeth

You've heard of genetic diseases, but how do they work? In this class we'll talk about the functions of various proteins and how they work and what happens if they don't. Familiarity with Punnett squares helpful but by no means necessary.

Arms Races and Selfish Genes   Katherine

Genes that are good at getting themselves copied are the ones most likely to survive. Sounds simple, almost tautological but in the evolutionary world, selfish genes can create nasty complications. In this class, we'll discuss examples of genetic conflict, when what's best for one gene may harm an organism as a whole. And we'll talk about evolutionary arms races when, as the Red Queen from Alice in Wonderland says, you run as fast as you can just to stay in place. Come learn about fungal genes called spore killers, parasitic DNA, and the inspiration for the word "meme."

Neutrinos   Lucy

In the time it takes you to read this description, hundreds of trillions of tiny particles called neutrinos will have harmlessly passed through your body. Recently, neutrinos made a splash in the news because of rumors that they were traveling faster than light. But what are neutrinos? Come learn what neutrinos are, how they're produced, how we detect them, and why neutrino physics represents such an exciting frontier in physics.

Résumé Writing   Rachel

Preparing for a job? Thinking about college? A résumé is a great supplementary material to have, and it is always a good idea to have one on the side for an emergency job application or another similar situation. Don't have one? Worried if yours is okay? Come learn the essential aspects of a résumé and figure out how yours can be improved or created to be the best that it could be.

A Story About Nothing: Henry James and the Nature of Consciousness

Amy

As a class, we'll go sentence by sentence through James's The Great Good Place. Looking at this complex text, we'll consider how Henry James takes a sledgehammer to concepts we thought we knew well like setting, plot, characters, and narrator what he replaces them with, and why.

Spectacular Failures in Engineering Systems

Elizabeth

The future of the world depends on engineers: when something goes wrong in an engineering system, the consequences can be enormous. In this seminar we'll examine some particularly spectacular cases of failure in engineering systems. We'll find out what went wrong and what we learned from the incident, and discuss challenges in both engineering and ethics.

Secret Gardens: the Private Life of Plants

Katherine

How would you go about life if you were rooted to the ground? In this class, learn about the often weird and wild world of plants. We'll start by observing and illustrating some local specimens, to learn the botanical basics. And then we'll move to the Little Shop of Horrors Mendel's nemesis, a plant that melts its way through winter snows, an orchid that's peculiarly frustrating to male wasps. We'll have live, or recently live, plants, so you may want to stay away if you have allergies.

Intro to Algorithms

Lucy

How can an unmanned emergency rescue vehicle find the shortest path to its goal in an unknown, dangerous territory? How does Google know which websites are important enough to be at the top of your search results? More mundanely, if I have a list of names in some random order, what's the fastest way to alphabetize them? Algorithms are not only interesting, they're everywhere in our lives. Come learn how computers carry out vital tasks in clever and efficient ways.

Non-Newtonian Fluids and Miracle Berries

Lydia

Sometimes things in life just seem not to make sense. What do you call a substance that flows like a liquid but turns solid when you hit it? No, this isn't the beginning of a bad science joke, it's a non-Newtonian fluid! Come make and learn about this fascinating substance first-hand. We will also learn about Synsepalum dulcificum, the miracle fruit, which makes sour things taste sweet. We'll find out how it tricks our brains and finally, we'll tease our tongues by testing it out for ourselves.

Dress to Success, and Other Interview Tips

Rachel

It's the big day you made the call, submitted the résumé, and now all you need to do is show up and give it all you've got. However, there are many factors to consider when going to an interview. First impressions mean a lot; make sure you know how to make a good one on future interviews.

True Life: I Worked in Undergrad Admissions

Amy

I read over 4,000 applications over my three years in college admissions at the University of Chicago. So even if 100 Junction students asked me 40 questions each about college applications, I will still have read more applications than have answered your questions. I don't believe in guessing, so I don't answer questions I don't know the answer to. I can, however, help you identify trusted resources for the kinds of questions you may have that I cannot answer myself.

Music and Movement: the Romantic Era

Elizabeth

Do Brahms, Sibelius, and Beethoven all sound Classical to you? Come to this seminar to learn about the differences in their musical styles as well as those of other composers of the Romantic Era. We'll be putting music into its historical context and listening to samples of music from the masters.

Symmetries in Physics

Lucy

The Sun's gravitational field is rotationally symmetric. Sounds boring? What if I told you that based on this extremely simple observation, you can deduce many crucial properties about planetary orbits without ever solving any complicated equations? It turns out that many difficult problems in physics can be solved in beautiful and simple ways by exploiting the symmetries of a system. We'll learn about Noether's theorem, claimed by some to be the most profound theorem in physics, which relates the symmetries of a system to its conserved quantities. And then we'll see how the study of symmetries has wide-ranging applications in classical mechanics, electrodynamics, and quantum mechanics.

A Rough Guide to the Brain

Lydia

Even though scientists have gathered a staggering amount of information about the brain, there are still vast, uncharted territories to be mapped in the field of neuroscience. One way scientists have come to understand the brain, however, is by studying what goes on when something goes wrong with it. Step into the shoes of a neuroscientist and come learn about the three-pound enigma inside your skull. **Note**: Students taking the Introduction to Neuroscience core class will likely find this seminar redundant and are encouraged to pick a different one.

Introduction to Philosophy

Rachel

Knowing how to ask questions and make valid arguments are important parts of being human. Philosophy is the study of fundamental problems through critical assessment: by learning how to ask questions and argue efficiently. Learn briefly about the different types of arguments you can use to answer questions you may have, and develop a better understanding of how to ask the right questions.

Let's Play Mafia!   Amy

Fight the mafia, fool the townspeople, die a dramatic death. This game can be played any time, anywhere, with a group of people larger than 8 or 9.

Junction Tea Party   Elizabeth

Come relax with many varieties of tea and cookies while we read and discuss selected short stories. We will not be throwing tea into the river.

Crocheting Hyperbolic Manifolds   Lucy

A hyperbolic manifold is a surface that has very different properties from the familiar flat Euclidean space. For instance, the angles inside a triangle don't add up to 180 degrees! We'll crochet our own hyperbolic manifolds, so that we have a tangible object for mathematical exploration. No previous crochet experience necessary.

How to Play the Ukulele   Rachel

Learn basic chords and a simple song or two on the ukulele!

Ultimate Frisbee   Jordan

Suitable shoes required (no sandals or flip-flips). Meet here in the dining room and we will head outside together.