### Dietrich College Freshman Seminars

**Fall 2018**

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**66-103, HSP Freshman Seminar: Appalachia**
The Appalachian region — which stretches from Georgia to New York’s southern plateau — has a particular place in American history and memory. This course will examine the political, literary, economic and historical narratives that surround the region, as well as examining the role that Appalachia can play as a model for developing regions in other parts of the world.

This course fulfills the Freshman Seminar requirement for the Humanities Scholars Program. Enrollment is restricted to first-year HSP students.

**66-106, QSSS Freshman Seminar: Applied Quantitative Social Science I**
The QSSS Freshman Seminar provides a fast-paced introduction to a range of methods in the quantitative social sciences. Organized around a set of case studies, the course introduces the language and methods of empirical research through a combination of seminar-style discussions of academic papers, and hands-on lab work using the statistical software R. Students will replicate results from a high-profile labor market discrimination paper, explore agent-based models of neighborhood segregation, and scrape Wikipedia data to examine imbalances in gender representation.
Enrollment restricted to first-year QSSS students.

66-107, Freshman Seminar: Modeling Complex Systems
Most of the major issues confronting humanity---such as climate change, financial collapse, ecosystem survival, terrorism, and disease epidemics---are the result of complex systems where the interactions of the pieces of the system create a whole that is rather different than any of its parts. Unfortunately, traditional scientific methods that focus on reducing systems to their parts and then analyzing each part provide little insight into such systems. This seminar explores the behavior of complex systems as well as how to model and understand them using both traditional tools and computer-based approaches.

66-109 / 39-109, Grand Challenge Freshman Seminar: Climate Change
Many consider climate change to be the most serious social, political, and environmental issue of the 21st century. As human activities increase the level of greenhouse gases in the atmosphere, scientists have established the reality of climate change and have estimated its impacts on human society and the natural world. Despite the scientific consensus on its existence, causes, and consequences, a substantial number of Americans and citizens of other countries still question these conclusions and a small but vocal group of doubters continue to challenge the science and scientific consensus on climate change.

In spite of some social division over these issues, governments at local, national, and international levels have made concerted efforts to craft policies to address climate change. These policies have shifted over time as the information, attitudes, and technology associated with climate change have evolved. In this course, we will explore the challenges and complexities of climate change by investigating the subject from a variety of angles: scientific, political, rhetorical, cultural, economic, technological, and ethical. Over the course of the semester, we will inquire: What is climate change? How do scientists know it is happening? Why is there public debate over it? What solutions are available? And what are the pros and cons of the different solutions?

66-117 Grand Challenge Freshman Seminar: Political Rhetoric
Political rhetoric is like an eel – slippery and difficult to grasp, but when you grab it, shocking. Or perhaps political rhetoric is like an octopus – hidden behind a defensive screen of ink, and ready to take you for a sucker. Or maybe political rhetoric is like a chameleon changing its nature based on context, such as the metaphors used to describe it.

We live in a Democracy, in which we, the electorate, are supposed to engage in discourse and political debate to make wise decisions about our country’s future. But language can be used to conceal and mislead, to exploit and to confuse. Spin and propaganda target psychological and institutional weaknesses, playing to our emotions, cognitive biases, and social contexts.

In this class, we will come to understand political rhetoric, how it propagates, persuades, pacifies and perplexes. And ultimately, how we can use language more effectively to create better political discourse and a better society.

66-118, Grand Challenge Freshman Seminar: Thinking with Evidence: Data, Scientific Discovery, and Society
In a time of big data and widespread skepticism of science, it is crucial to understand how data and facts can be turned into conclusions, and then into public policy. Using topics from medicine, epidemiology, and public health, this course provides students an introduction into the grand challenge of understanding how evidence is used (and abused) in support of scientific conclusions. Questions of health and disease are particularly important areas for thinking about facts and figures because many life-or-death decisions have to be made on the basis of fragmentary and unreliable evidence. Every trip to the doctor, illness, and vaccination involves a complicated mix of public
policy, scientific evidence, and emotional and historical factors. This course helps students understand the sciences and the humanities as united in their desire for rigorous argumentation rather than as competing or incompatible ways of thinking. Moreover, by taking a wide-angle lens to the topic, students will see how and why standards of scientific proof have changed over time, and track what these changes mean for thinking about evidence. Co-taught by a statistician and historian, this course draws on many different disciplines, providing students a broad introduction to reasoning across the humanities and social sciences.

Students will be required to participate in written and oral arguments, read scientific articles as well as political, historical, and legal documents, and prepare a capstone project in which they will be asked to weigh real-life evidence and recommend a course of action to the Food and Drug Administration. Other topics may include vaccination controversies, regulation of carcinogens and toxic chemicals, mammography screening standards, and the treatment of infectious diseases in global health settings.

66-161 / 16-161, Grand Challenge Freshman Seminar: Artificial Intelligence and Humanity

In 1965 British mathematician I.J. Good wrote, “An ultraintelligent machine could design even better machines; there would then unquestionably be an ‘intelligence explosion,’ and the intelligence of man would be left far behind.” As we enter an age where companies like Uber are testing driverless cars in Pittsburgh and innovative interfaces like IBM’s Watson can play jeopardy and learn techniques for medical diagnoses, how are we to negotiate an ‘intelligence explosion’ that for many individuals might threaten the very notions of what it means to be human? The future of human-to-machine relationships will likely define our historical epoch and yet, many young technologists and humanists underestimate the downstream impact of technological innovations on human society. Presently, we have little choice but to attend to this rapidly anxiety-ridden question.

This seminar will attend to the challenge of contemporary existential questions on what it means to be human (read not machine) in the context of a rapidly advancing technological age. We will consider human narratives throughout history that exam how governments and individual citizens defined humanity in the context of slavery and colonialism as a framework for exploring and projecting what it means to be human in the age of rapidly advancing ‘intelligent’ machines. We will trace the technological advancements of the recent five decades and identify historical precedents and speculative narratives that help us to consider issues like labor, economic disparity, negotiations of power, human dignity and ethical responsibility within the context of human relations with advancing technological tools that are now coined, artificial intelligence.