

Bowdoin College

Digital and Computational Studies

Course Offerings Spring 2022



DCS 1100

Professors Eric Chown and Fernando Nascimento

Course Description:

Examines the impact of digital artifacts, networked interaction, and computational analysis on the ways in which we establish new knowledge, engage in creative and social practices, and understand the self. Studies how the combination of large-scale digital data and computational modeling methods shape our agency as decision-makers. Emphasis on how the Liberal Arts shape and are shaped by these processes. Coursework includes quantitative analysis, machine learning, text and network analysis, critical readings in the field, and short, exploratory projects. Assumes no knowledge of programming or any software that will be used.

No prerequisites.

DCS 2100/URBS 2100/ITAL 2100 Digital Florence

Professor Crystal Hall

Course Description:

Asks what a digital representation of a city could and should be, particularly in a moment when travel is limited, using Florence, Italy as a case study. Examines digital image, text, and spatial data about the city, juxtaposing it against non-digital primary sources, secondary critical readings, reflections on experiences of urban and other spaces, and data that we will create in class. Emphasizes shifting definitions across time, language, and digital artifacts of what and who is Florentine in these representations. Coursework happens in three phases: going “under the hood” of the popular digital artifacts that provide an experience of Florence in order to evaluate strengths and weaknesses of representation; expanding our definition of Digital Florence to find local perspectives on what the essential features of the city could be; and proposing a digital intervention that better reflects the values we have identified throughout the semester. Assumes no programming knowledge. Taught in English.

No prerequisites.

DCS 2350/CSCI 2350 Social and Economic Networks

Professor Mohammad Irfan

Course Description:

Examines the social and economic aspects of today's connected world from a multitude of perspectives; namely, network science, computer science, sociology, and economics. The fundamental questions to be addressed are: What are the properties of real-world networks? What are the effects of networks on our behavioral choices like quitting smoking or eating healthy? How do cascades in networks lead to outcomes like videos going viral? How does Google

search the Internet and make money doing so? Debates issues around centrality in networks. Uses game theory to study strategic interactions in networks and markets.

Prerequisites: DCS 1100 or CSCI 1101 or CSCI 1103 (same as DCS 1300).

DCS 2450 Technology and the Common Good

Professor Fernando Nascimento

Course Description:

As the pace of technological change continues to accelerate, it raises questions about the impacts, positive and negative, on society. Will technology make our lives more comfortable and pleasant or will it destroy human society and lead us to a catastrophic ending? The answers largely depend on our ability to consider new technology advancements in light of desires to live good lives within just institutions. Students engage with topics of current relevance such as artificial intelligence, gene editing, virtual reality, robotics, and the internet of things. Discusses the underlying technological aspects of each and the possible implications for society. Students apply philosophical and ethical concepts and frameworks to consider how technology can become a positive force for the common good and debate possible ways to evaluate and avoid undesirable effects of current and future technologies. No prior programming experience required.

No prerequisites.

DCS 3450 Cognition in Analog and Digital Environments

Professor Eric Chown

Course Description:

Human cognition was shaped by an environment unlike the one we live in today. The human capacity for perception and thought are not neutral; rather, they are attuned to the physical world in which the mind evolved. The digital world presents the mind with a very different environment, one in which the human capacity to effectively process information is often stretched to its limit. Meanwhile, large corporations are using psychology, AI, and machine learning in order to more effectively capture and keep our attention. This course examines the relationship of cognition to the environment, whether it be analog or digital, and focuses on the unusual challenges to cognition that come from operating in today's digital world.

Prerequisite: DCS 1100 or DCS 1200.

DCS 3999 Capstone Implementation

Professor Crystal Hall

Course Description:

Guided independent implementation of the DCS senior coordinate major project. Concentrates on contextualization of methods and results, articulation of critical analysis, evaluation of possible project expansion or next steps, and presentation of the final outcome(s). Assigned readings will focus on interdisciplinary research models; weekly activities will engage with the scholarly communities represented by the project; and project components will have an opportunity for peer review throughout the semester.

Prerequisite: students need second semester senior standing in the spring and to be a declared DCS coordinate major.