

Bowdoin College

Digital and Computational Studies

Course Offerings Fall 2021

[DCS Coordinate Major/Minor Requirements](#)

DCS 1100

Professors Crystal Hall 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 1300/CSCI 1103 Programming with Data

Professor Eric Chown

Course Description:

Intended for students with some programming experience, but not enough to move directly into Data Structures. An accelerated introduction to the art of problem solving using the computer and the Python programming language. Weekly labs and programming assignments focus on "big data" and its impact on the world.

Prerequisite: CSCI 1055 or DCS 1100 or DCS 1200 or Placement in above CSCI 1101.

DCS 2335/ENVS 2004/URBS 2004 Understanding Place: GIS and Remote Sensing

Professor Eileen Johnson

Course Description:

Geographical information systems (GIS) organize and store spatial information for geographical presentation and analysis. They allow rapid development of high-quality maps and enable powerful and sophisticated investigation of spatial patterns and interrelationships. Introduces concepts of cartography, database management, remote sensing, and spatial analysis. Examines GIS and remote sensing applications for natural resource management, environmental health, and monitoring and preparing for the impacts of climate change from the Arctic to local-level systems. Emphasizes both natural and social science applications through a variety of applied exercises and problems culminating in a semester project that addresses a specific environmental application. Students have the option of completing a community-based project.

No prerequisites.

DCS 2500 Digital Text Analysis
Professor Fernando Nascimento

Course Description:

Explores how digital techniques can enhance our understanding of text. Investigates how to make sense of the burgeoning number of textual sources in a timely manner and what new questions can be raised and answered by computer-based text analysis. Students learn to apply tools for analyzing large texts to problems drawn from areas throughout the liberal arts, such as psychology, philosophy, and literature. In addition, students address questions ranging from authorship of Supreme Court opinions, to using thirty years of newspapers to reexamine historical questions, to interpreting Raphael's masterpiece "School of Athens" through an analysis of Aristotle's and Plato's works. While doing so they also study the strengths and weaknesses of these approaches. No previous computer programming experience is required.

Prerequisites: CSCI 1000 - 2969 or CSCI 3000 or higher or DCS 1000 - 2969 or DCS 3000 or higher.

DCS 2550/HIST 2625 Mapping American History using Geographic Information Systems (GIS)
Professor Patrick Rael; Aaron Gilbreath

Course Description:

In this intermediate seminar we will use Geographic Information Systems to explore historical problems in 19th-century US history. We will introduce and practice basic statistical techniques, and use the class GIS database to investigate problems, construct our own historical datasets, and make our own maps. Class projects will challenge students to develop critical thinking skills in historical and computational methods, and practice effective data presentation. We will work with a wide array of history data, including information on race, ethnicity, gender, religion, agriculture, slavery, and voting behavior in the period in question. Throughout, we will probe the possibilities and limitations of GIS as a digital technology and methodological approach to historical analysis. This course is part of the following field(s) of study: United States.

Prerequisites: HIST 1000 - 2969 or HIST 3000 or higher

DCS 2800 Digital Privilege
Professor Eric Chown

Course Description:

The promise of the internet was that it was a world without "prejudice or privilege". Instead it has exacerbated the elements of privilege already prominent in society. This course examines issues of privilege in digital environments both through the lens of algorithms and through interactions with others, with a particular emphasis on social media. The course begins with an examination of supportive environments, the consequences when the supportive components fail, and the roots of those failures. We will then use that perspective to look at digital environments, examining different forms of privilege, including race, gender, age, and class among others to show how the digital environment often makes issues around privilege worse rather than better. Meanwhile, many groups are simply unable to take advantage of the digital world at all. Work for the course will consist of a series of short papers and a culminating project that takes on one form of privilege in more detail.

Prerequisites: DCS 1100 or DCS 1200.

DCS 3998 Capstone Design**Professor Mohammad Irfan****Course Description:**

Guided development of the outline and proposal for the DCS senior coordinate major project. Concentrates on evaluating methodologies appropriate to the topic, developing a data set along with biography and management plan, practicing iterative project design, and establishing a foundational and interdisciplinary research bibliography. Assigned readings will address best practices in the field for starting and maintaining long-term projects; weekly activities will focus on developing the scholarly rationale for project design choices and presenting updates; and proposal components will have an opportunity for peer review throughout the semester.

Prerequisites: DCS 1100 or DCS 1200; students need senior standing and to be declared DCS coordinate majors.