Spatial Analysis and Visualization Initiative
GIS and Design Certificate Program: Fall 2014

Pratt Institute’s Spatial Analysis and Visualization Initiative (SAVI) is launching a GIS and Design Certificate program this fall. We will run four courses and two workshops this semester as we build towards offering a full, for-credit program.

Developed in collaboration with the Pratt Center for Continuing and Professional Studies, this certificate offers a rigorous grounding in the principles of spatial thinking and visual design. Students in our program learn to explore and analyze data, develop technical mapping skills, and apply visual design principles in the context of spatial analysis.

For more information please contact savi@pratt.edu.

Program Overview
Mapping is transforming how we communicate and interpret data. Creative professionals, designers, developers, programmers, architects, and planners are increasingly using maps to engage diverse communities and build innovative solutions to real-world problems. Pratt’s Geographic Information Systems (GIS) and Design Certificate Program gives students the tools to make compelling, data-driven maps and visualizations.

In addition to learning how to properly assess and analyze spatial data in a traditional desktop GIS environment, online mapping and web design are a core component of the Certificate. All Certificate students will learn the principles of design for the web, interactive design, user experience, and the technical underpinnings of online mapping.

Our courses cover a range of online GIS products and open source mapping tools. More advanced students, particularly those with a background in programming and web development, will have the opportunity to build dynamic web-based maps and work with programming languages like Python, Processing, and JavaScript (including D3). By the end of the Certificate Program students will emerge with an online portfolio demonstrating their ability to make visually sophisticated maps based on thorough, accurate analysis.

GIS and Design Certificate coursework is collaborative and multi-disciplinary. Students work on innovative projects with instructors and students from across Pratt Institute, including Graduate Communications Design and the Programs for Sustainable Planning and Development (PSPD). Course projects give our students the opportunity to bring their diverse backgrounds to bear on research and problem solving. For example, students will be able to take advantage of Pratt’s long history of community development by working with local organizations on real-world projects. Students may choose to take individual classes or enroll in the full Certificate Program.

Why Choose Pratt Institute?
• As an internationally recognized school of art, design, and architecture, Pratt Institute offers GIS and Design Certificate students the opportunity to take advantage of our diverse faculty and interdisciplinary focus.
• GIS and Design Certificate Program faculty are practicing professionals in mapping and digital media who are drawn from across New York City and from within Pratt Institute.
• The GIS and Design Certificate Program is a product of Pratt’s Spatial Analysis and Visualization Initiative (SAVI), a new center to foster a GIS-centered learning and research community. Students in our program will have access to advanced software and a community of spatial and information design professionals.

Certificate Requirements
The certificate program requires the successful completion of 225 hours of study. This includes 120 hours of required study and 105 hours of study in elective courses plus a $100 non-refundable application fee.

Certificate Students must discuss their planned electives with the Program Director and receive approval for the proposed course of study.
## Curriculum

### Required Core Courses: 3 courses equaling 120 hours of study
- XSAVI-700: Foundations: Spatial Thinking, Data, and Design (30 hours)
- XSAVI-701: Introduction to GIS Tools and Software (45 hours)
- XSAVI-800: Advanced GIS (45 hours)

### Electives: A combination equaling 105 hours of study
- XSAVI-710: Critical Data Acquisition and Assessment: Open Data Focus (6 hour workshop)
- XSAVI-711: Introduction to GIS and Mobile Data Applications (12 hour workshop)
- XSAVI-712: Citizen-science data collection and analysis (12 hour workshop)
- XSAVI-713: GIS for Architects: Integrating 3D (12 hour workshop)
- XSAVI-714: Integrating GIS and Art (12 hour workshop)
- XSAVI-715: GeoHumanities (12 hour workshop)
- XSAVI-750: Mining the Web: How to Scrape, Analyze, and Map Open Data (30 hours)
- XSAVI-751: Data-Driven Decision-making: Demographic Analysis & Socioeconomic Trends (30 hours)
- XSAVI-752: GIS for Programmers and Web Developers (30 hours)
- XSAVI-754: Mapping Climate Change, Natural Disasters, & Environmental Data (30 hours)
- XSAVI-780: Interactive Web Mapping, Programming and Design (45 hours)
- XSAVI-810: Programming for ArcGIS (30 hours)
- XSAVI-811: GIS and Mobile Data Applications (45 hours)
- XSAVI-815: Advanced Cartographic Design and Visualization for GIS (45 hours)
- XSAVI-850: Internship or Project (30 hours)
- XSAVI-851: Practicum (30 hours)
- XSAVI-854: Advanced Spatial Statistics (45 hours)

## Fall 2014 Courses

### Foundations: Spatial Thinking, Data, and Design
Learn to tell stories with maps and data. There’s more than meets the eye when it comes to creating accurate, compelling visualizations based on GIS analysis. This course introduces the critical fundamentals of spatial theory, cartography, design, and data visualization. You will acquire the skills to properly assess and analyze spatial data and maximize the message of your map output through engaging design.

**Topics Include:** Theories of spatial relationships, cartography and map design, assessing data quality, types and sources of data available, and information visualization.

**T/Th 6 PM – 9 PM**
10 sessions Sept 9–Oct 9
XSAVI-700, 30 hours
Instructors: Jeff Ferzoco and Alihan Polat

### Mining the Web: How to Scrape, Analyze & Map Open Data
Data is all around us. There are now seemingly unlimited datasets on the web but they aren’t always easy to obtain. And, social media is generating new kinds of data that can be analyzed spatially. You too can conquer the world “wild” web and create sophisticated maps and visualizations. Through a course project, you will mine open data from a variety of platforms and experiment with different mapping/visualization techniques; while also learning how to critically assess the utility and accuracy of data.

**Topics Include:** Scraping data from social media/online platforms, analyzing large datasets, assessing data quality, working with mapping software and programming languages (may include: OpenRefine, Python, HTML, MapBox, QGIS and more).

**Sa 9 AM – 5 PM**
4 sessions Sept 6–Sept 27
XSAVI-750, 30 hours
Instructor: Richard Dunks

### GIS for Programmers and Web Developers
Do you know what the Modifiable Areal Unit Problem is? If not, you might be creating beautiful but inaccurate map visualizations. Supplement your valuable programming and web development skills by establishing a firm grasp of core GIS concepts, the principles of spatial representation, and best practices for acquiring and assessing geographic data. You will experiment with GIS data in an open source platform and you’ll learn how to migrate GIS output to the programming platform of your choice.

**Topics Include:** Introduction to spatial theories, working with...
GIS data, comparing the reliability of data sources, creating online maps. Working with QGIS, Geoda, web mapping platforms like CartoDB or MapBox, and open data portals.

Sa 10 AM – 4 PM
5 sessions Oct 11-Nov 8
XSAVI-752, 30 hours
Instructors: Lela Prashad and JD Godchaux

**Interactive Web Mapping, Programming and Design**

Another day, another beautiful web map in your blog feed. Want to know the secrets behind all those amazing maps? This course will give you the skills to build dynamic web-based maps and data visualizations. You will learn the principles of GIS, design for the web, interactive design, and user experience. By the end of the course, you will be able to work with programming languages like Python, Processing or JavaScript (D3) and online mapping platforms in order to create professional looking interactive maps and map-based charts and graphics.

**Topics Include:** Principles of GIS, design for the web and user experience. Each semester a suite of tools will be introduced from this list: QGIS, programming language (D3, Processing, Python, or other JavaScript), web mapping tools (CartoDB, TileMill, and/or MapBox), and Adobe Creative Suite.

T/Th 6 PM – 9 PM
15 sessions Oct 21-Dec 11
XSAVI-780, 45 hours
Instructors: Chris Whong and TBD

**Fall 2014 Workshops**

**Critical Data Acquisition & Assessment: Open Data Focus**

Learn rigorous, professional methods for working with open data and large datasets. This 6-hour workshop provides an intensive overview of data acquisition and assessment techniques. You will learn what questions to ask when acquiring data, how to obtain a wide variety of datasets, and how to think critically about data quality. By the end of the workshop you will have a firm grounding in how to apply these techniques in visual analysis outputs and web maps.

**Topics Include:** Working with large datasets, evaluating data quality and accuracy, and documenting data sources and methods, open data sources, acquiring data.

Sa 10 AM – 4 PM
1 session Sept 6
XSAVI-710, 6 hours
Instructors: Noel Hidalgo and Nathan Storey

**Introduction to GIS and Mobile Data Applications**

The prospect of a creating a mobile data application for your organization can be overwhelming. Dip your toes in the water through this two day workshop. You will be introduced to existing options for mobile data collection and how those apps are structured. Important considerations when choosing a platform and programming options will also be discussed. You will have the opportunity to experiment with customizing a mobile application through code and creating a web map of field collected data.

**Topics Include:** Using ArcGIS, QGIS, Java, and/or JavaScript to analyze data collected with mobile devices, assessing and choosing mobile application software, integrating basic programming into online mapping applications.

Sa 10 AM – 4 PM
2 sessions Nov 15, Nov 18
XSAVI-711, 12 hours
Instructor: Jonathan Levy

**Registration**

To register, see the Pratt Center for Continuing and Professional Studies website. Enter “XSAVI” in the course search box.

There is a non-refundable $100 application fee, payable to CCPS, to enter the full certificate program. Call 855.551.7727.

**About SAVI**

Established in 2013, the Spatial Analysis and Visualization Initiative (SAVI) is a Geographic Information Systems (GIS)-centered initiative that provides Pratt students, faculty, and community-based organizations access to GIS and visualization resources, including equipment, databases, technical assistance, workshops, training sessions and researchers. A joint endeavor of the Programs for Sustainable Planning and Development (PSPD), the Pratt Center for Community Development, and the Graduate Communications Design Department, SAVI aims to promote a collaborative learning and research community at Pratt where faculty and students can share projects, ideas, resources and tools.

In keeping with Pratt’s commitment to benefit the greater community of which it is a part, SAVI also provides New York City-based nonprofit, civic, and community-based planning organizations (including Community Boards) with the latest mapping, data, and spatial information technology; access to GIS technical assistance, analysis, and data display interns; and the training and access to resources that allow independent GIS work. These groups will be able to efficiently document existing conditions of urban areas, more meaningfully contribute to policy discussions, and create their own visions for improving quality-of-life and sustainability.