

Digital Mapping

College of Arts & Sciences

The Department of Geography at the University of Kentucky offers two completely online programs in Digital Mapping: an 11-credit Graduate Certificate and a 30-credit Master of Science (Plan B, non-thesis).

The Digital Mapping graduate programs at the University of Kentucky offer a challenging, intensive, digital mapping curriculum that emphasizes the acquisition of technical skills — coding, GIS, web development — while also preparing students to critically address the complexity of today's information ecosystem.

These Graduate Certificate and Master of Science degree programs in digital mapping were designed with all levels of experience in mind. Whether students are new to open source software or an experienced GIS user, they will benefit from a truly unparalleled online learning experience developed by internationally-renowned faculty in a top-ranked geography department.

Students will develop the technical skills and design fluency you need to make highly sophisticated web maps that are also elegant and impactful. Perhaps even more importantly, they will learn to think critically about the social dimensions of the maps they make and the data from which they make them. Maps, after all, are powerful things: they shape what we see and what we don't, with serious implications for how we come to know the world.

Graduate Certificate in Digital Mapping

Admission Requirements and Application Information

Prospective applicants must meet the general requirements of the Graduate School regarding minimum undergraduate grade point average. Applications to the Graduate Certificate in Digital Mapping are accepted online via the UK Graduate School application portal:

https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantConnectLogin.asp?id=ukgrad. The applicant will be required to submit official transcripts for all undergraduate work. Personal statements, GRE scores, and CVs may be included but are not required for the graduate certificate application.

Admission to the Graduate Certificate in Digital Mapping occurs twice annually, during the Spring and Fall semesters. Applications are accepted until 2 weeks before the term start using custom dates detailed on the Programs page: <https://newmapsplus.as.uky.edu/programs>

Certificate Requirements

After applying and being accepted to the Graduate Certificate in Digital Mapping, the student must complete the following 11 hours of coursework.

MAP 671	Introduction to New Mapping	(3)
MAP 672	Programming for Web Mapping	(4)
MAP 673	Design for Interactive Web Mapping	(4)
TOTAL CREDIT HOURS FOR CERTIFICATE		11

Course Descriptions

MAP 671 INTRODUCTION TO NEW MAPPING. (3) This course introduces students to both the social and technical aspects of digital mapping in the 21st century. Students will learn fundamental concepts and techniques in cartography and GIS, including file types, data classification, map projections spatial reference systems, and elementary analytical techniques in a range of desktop and web-based mapping platforms. In addition to providing the fundamental technical competencies necessary to create maps, students will develop the critical awareness required to effectively communicate complex social processes through maps, using industry-standard practices for distributed software development.

MAP 672 PROGRAMMING FOR WEB MAPPING. (4) This course introduces students to the fundamental concepts and techniques of web development and computer programming through web mapping. Students will become familiar with current web standards and proficient in manipulating the structural, stylistic and behavioral elements of web maps through programming. Students will translate these practices to achieve objectives in web cartography such as the display of a basemap, the thematic representation of data, and the employment of interaction to enhance the user's experience with the map.

MAP 673 DESIGN FOR INTERACTIVE WEB MAPPINGS. (4) This course integrates the principles of geographic representation and user interaction to create high-quality web maps. Students will design interactive web maps that visually communicate spatial data and provide an interface for greater user engagement with the map. The course will train students to compose interactive maps within the context of a coherent web page layout, including the development of supplementary content (such as text and metadata) to aid in visual storytelling.

Master of Science (MS) in Digital Mapping

Admission Requirements and Application Information

In addition to meeting the general requirements of the UK Graduate School, applicants to the Master of Science (MS) in Digital Mapping **should demonstrate some familiarity with** mapping technologies and/or coding for the web. Applications to the MS in Digital Mapping are accepted online via the UK Graduate School application portal:

https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantConnectLogin.asp?id=ukgrad. The applicant will be required to submit official transcripts for all undergraduate work, a personal statement, CV or resume, mapping portfolio and/or examples of coding experience, and 1-2 letters of recommendation. GRE scores may be included but are not required for the MS in Digital Mapping application.

Admission to the MS in Digital Mapping occurs three times annually. New students must start in either the Spring or Fall but returning graduate certificate students may also enter the MS during the Summer. Applications are accepted until 2 weeks before the term start using custom dates detailed on the Programs page: <https://newmapsplus.as.uky.edu/programs>

MS Degree Requirements

After applying and being accepted to the MS in Digital Mapping, the student must complete the following 30 hours of coursework.

MAP 671	Introduction to New Mapping	(3)
MAP 672	Programming for Web Mapping	(4)
MAP 673	Design for Interactive Web Mapping	(4)
MAP 674	Spatial Data Analysis and Visualization	(4)
MAP 675	Collaborative Geovisualization	(4)
MAP 701	History of Critical Cartography	(2)
MAP 719	Social Impacts of New Mapping	(3)
MAP 698	Final Project Preparation	(3)
MAP 699	Final Project Implementation	(3)
TOTAL CREDIT HOURS FOR MS DEGREE		30

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MAP 674 SPATIAL DATA ANALYSIS AND VISUALIZATION. (4) This course introduces students to advanced techniques for the quantitative analysis and visualization of spatial data. Students will become familiar with a broad spectrum of data cleaning, transformation, analysis, and visualization techniques helpful for answering in-depth questions based on geospatial data. Students will learn how to prepare raw source data and subsequently apply both global and local spatial analysis techniques, resulting in advanced, interactive data visualizations.

MAP 675 COLLABORATIVE GEOVISUALIZATION. (4) This course enables students to build rich, user-centered web interfaces to promote the exploration and understanding of complex spatial datasets. Students will critically engage in a variety of data sources (e.g., public data repositories, crowdsourced or volunteered data) and design interactive cartographic solutions to more effectively visualize geographic information.

MAP 701 HISTORY OF CRITICAL CARTOGRAPHY. (2) This course outlines key moments and arguments in the history of cartography with particular attention to the advent of digital mapping and GIScience. Students will review and discuss the epistemological and ontological tensions within the field and practice a range of philosophical approaches to cartographic representation and spatial analysis.

MAP 719 SOCIAL IMPACTS OF NEW MAPPING. (3) This seminar introduces social and cultural issues that have emerged alongside the growth of digital mapping and location-based services. It reviews the evolving nature of digital divides, expert versus crowdsourced knowledge, surveillance, privacy and the

ethics of big geospatial data collection and use. Students will utilize these discussions of the social impacts of new mapping to challenge and contextualize their own mapping projects.

MAP 698 FINAL PROJECT PREPARATION. (3) This course enables students to design and prepare a web mapping workflow for a project of their own selection. This project is the masterwork for the Master of Digital Mapping degree. Students will determine a geographic problem mapping can address, identify user needs, review relevant literatures, take on ethical concerns and collect and prepare the data necessary for the project. Students will also propose strategies for data representation, user interface and online dissemination of the project. This course will culminate with a project design presentation and critique by peers and instructors.

MAP 699 FINAL PROJECT IMPLEMENTATION. (3) This course takes the project design developed in MAP 698 and produces a mapping project based on this outline. Students will conduct data analysis, iteratively review and improve the map user interface, produce written documentation on methods used and findings and engage in intense testing of the mapping solution with peers and targeted end users. At the end of the course, students will make a real-time online oral presentation and defense of the project for a committee of faculty members.