

Bunker Hill Community College
Introduction to Geographic Information Systems GIS-124
Spring Semester 2015

Instructor: John Patrick Connors
Office Location: B336
Office Hours: Thursdays 11:30-12:30 or by appointment
Email: jp201162@bhcc.mass.edu
Meeting Times/Location: Fridays, 6pm-10pm, D101

Course Description

Geographic Information Systems (GIS) are a powerful way to access, map, and analyze spatial information. This course provides an introduction to the concepts of GIS and analysis of geospatial datasets. Through a series of lectures, hands-on computer based exercises, and web enhanced modules, students will learn how to use ArcGIS to analyze geospatial data and create maps, as well as develop skills in database and spreadsheet management with Microsoft Excel. In addition to learning how to manage and analyze spatial datasets, students will develop a familiarity with core concepts in geography and cartography. This is a 4 credit course.

Prerequisites

Reading Skills II (RDG095) or Academic Reading III (ESL098) or exemption by placement.

Student Learning Outcomes

After the successful completion of this course students will be able to:

- Describe the fundamental concepts of Geographic Information Systems and Technology.
- Demonstrate proficiency in displaying spatial data sets.
- Perform analysis with both raster and vector data.
- Demonstrate proficiency in map design principles, including thematic map display.
- Understand principles of map projections, and cartographic design.
- Demonstrate proficiency in the creation and acquisition of spatial data.
- Generate and edit datasets in Microsoft Excel.
- Apply spatial analysis techniques to solve geographic problems.
- Produce high quality and informative maps that support their analyses.
- Convert and share geospatial datasets.

Required Reading Material and Textbooks

Getting to Know ArcGIS Desktop 10.1

Law, Michael and Amy Collins

ESRI Press, 2013

ISBN: 9781589483088

Edition: 3rd for 10.1

Understanding GIS: An ArcGIS Project Workbook

Harder, Christian, et al.

ESRI Press, 2013

ISBN: 9781589483460

Edition: 2nd for 10.1 & 10.2

Other Materials

- ArcGIS Software - Access to ESRI time-limited student editions is available for free with the textbooks. This software only runs on Windows.
- A USB flash drive or external hard drive
- Access to computer with a word processor, Internet access and Microsoft Excel.
- A Microsoft One Drive Account

Teaching and Procedures

Methods of Instruction:

We will meet every Friday evening in order to complete multiple in-class assignments. These hands-on laboratory assignments will allow you to develop practical skills under the supervision of the instructor. Lectures will be provided online via Moodle. *Every student is expected to have access to Moodle and to watch the lectures before class on Friday.* The online lectures are intended to preserve as much laboratory time as possible for actual use of the software. We will briefly discuss and recap each online lecture in class.

Student Evaluation

A student's grade will be based on multiple measures of performance. Measures may include, but are not limited to, the following:

Mid-Term			30%
	One Exam	30%	
Final Project			30%
	Proposal	3%	
	Progress Report	3%	
	Final Paper	15%	
	Final Presentation	9%	
Lab Reports			30%
	10 Reports	3% Each X 10	
Participation and Attendance			10%
Total		100%	100%

Mid-Term Exam Format

The exam will evaluate student skills by presenting a problem that needs to be solved in a GIS environment. Students will be presented with an issue to evaluate using the GIS tools that they have explored throughout the course. The students will submit a series of maps and short answers describing the process that they used to create the maps.

Final Project

The final project is an opportunity to apply GIS skills to local issues of interest to the students. These projects will be completed in groups of 3-4. A detailed description of the problem will be presented later in the semester. The final project grade will be based on a project proposal (10%), a project progress report (10%), a written report (50%) and an oral presentation (30%).

Lab Reports

Each week, student will complete a report regarding the skills that they learned and employed, and also presenting the results of their analysis. The lab report will follow a standard template. All lab reports must be submitted before the start of the next class, i.e. 5:59 on Fridays. Labs are to be submitted using the course's Moodle site. Labs will be graded on a scale of 1 to 10 based on completeness, clarity, and correctness (of results).

Course Policies

Attendance and Lateness

Participation and punctuality is important to success in this course. Students should make efforts to arrive on time to class. A record of your attendance will be kept and consistent lateness will result in a reduced grade for the participation component of this course. If arriving late to class, please come in quietly and be respectful to the class in progress.

Mobile Phone and Digital Device Policy

The use of electronic devices for purposes other than taking notes is forbidden in the classroom. Anyone using electronic devices in a way that is distracting to their classmates or the instructor will be asked to leave the class. Distracting use of electronics includes listening to music, talking on the phone, texting, visiting social media sites, wearing headphones, and watching videos.

Classroom Conduct

Although I attempt to maintain an informal classroom atmosphere any student behavior that disrupts the learning process of the class will not be tolerated. Disruptive behavior includes private conversations during lectures, cheating on exams, plagiarism, racial and sexual harassment, damage to college equipment, intoxication, or any other activities that infringe on the rights of other students to learn. Depending on the severity of the activity, disruptive behavior may result in actions ranging from a warning to administrative withdrawal from the class.

Due Dates

The assignments are due via Moodle by 11:59pm on the specified due date, unless otherwise noted. You are responsible for submitting all assignments by the due dates specified on the syllabus, even if the instructor does not provide any additional reminders. Late submissions will receive a reduced grade.

Assignments

Assignments must be typed with a word processor and submitted electronically via Moodle as a Word Document or a PDF. Please visit one of BHCC's public computer labs if you do not own a computer. Print or e-mailed submissions will not be accepted. I highly recommend that you save electronic copies of your reports for your personal records.

BHCC Policies

Students with Disabilities

The College is committed to providing equal access to the educational experience of all students in compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. A student with documented disability should schedule an appointment with the Office of Students with Disabilities (E-Building Room E222) in order to obtain appropriate services. Learning accommodations outside of the standard course

requirements cannot be provided without written notification from the Office for Students with Disabilities.

Cheating and Plagiarism

Cheating is defined as taking credit for work done by another person; knowingly giving, receiving or using unauthorized assistance during tests or exams, copying or purchasing other's work; arranging for others to do your work. Plagiarism consists of submission of work of an author without giving acknowledgement and credit to the course; paraphrasing the work of their authors without crediting the sources; using direct quote from any text without acknowledgement of the author and source. Cheating and Plagiarism will result in course dismissal and disciplinary proceedings by the college for violation of the BHCC Student Code of Conduct.

Sustainability

BHCC is committed to a mission that advances sustainability, environmental conservation and scholarship on sustainability topics and to help prepare the next generation of leaders in a new clean energy economy. We seek to position Bunker Hill Community College at the vanguard of the field and help it make the environmental, social, health, and economic benefits of sustainability a reality on our campus and around the world to better serve our diverse community.

Grading

94-100 = A
90-93 = A-
87-89 = B+
83-86 = B
80-82 = B-
77-79 = C+
70-76 = C
60-69 = D
0-59 = F

Tentative Course Schedule:

The schedule is subject to change.

<i>Week</i>	<i>Topics</i>	<i>Reading and Assignments</i>
1 Jan 23	Introduction to GIS and Spatial Data	UGIS L1
2 Jan 30	Coordinate Systems and Projections	GTK 6; UGIS L3 Lab Report 1 Due
3 Feb 6	Symbology and Classification	GTK 7, 8; Lab Report 2 Due
4 Feb 13	Spatial Data Formats and Geodatabases	GTK 11; UGIS L4 Lab Report 3 Due
5 Feb 20	Creating and Editing Features and Attribute Data	GTK 12; UGIS L5 Lab Report 4 Due
6 Feb 27	Data Queries and Data Joins	GTK 15, 17; Lab Report 5 Due
7 Mar 6	Spatial Analysis	GTK 18; UGIS L6 Lab Report 6 Due
8 Mar 13	Modeling and Automation	UGIS L7; Lab Report 7 Due
9 Mar 27	Exam (Practical)	
10 April 3	Presenting Data	UGIS L8; GTK 9, 10; Project Proposal Due Lab Report 8 Due
11 April 10	Raster Data Analysis and Remote Sensing Projects	GTK 20; Remote Sensing Lab; Lab Report 9 Due
11 April 17	Web GIS Projects	GTK 5; UGIS L9 Lab Report 10 Due
13 April 24	Global Positioning Systems Projects	Data Sources and Previews Due Lab 11 Report Due (Make-up)
14 May 1	Open Source GIS Projects	
15 May 8	Final Presentations	Final Papers Due
16 TBD	Final Presentations	