Course Syllabus

GEOGRAPHY 391-591
Fall 2012

GIS I: MAPPING AND VISUALIZATION

Instructor: Mamadou Coulibaly
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Office Hours: Monday: 10:00AM – 12:00PM
Tuesday & Thursday: 12:15 – 1:15 PM
Wednesday 10:15 – 11:15 AM

Department of Geography: http://www.uwosh.edu/departments/geography/

Meeting time:
Lectures**:** 1:20 AM – 2:50 PM, Tuesday & Thursday, Sage Hall 4422
Lab: 11:30 AM – 1:40 AM, Wednesday, Sage Hall 4422

Text Books: Robinson, Morrison, Muehrcke, Kimerling, Guptill. *Elements of Cartography*. Wiley, 6th Edition
Slocum. *Thematic Cartography and Geovisualization*. Prentice Hall.

GIS and Cartography Software (available in the GIS Lab)

ArcGIS 10 (ArcView, ArcEditor, ArcInfo)
ArcView Version 3.3
ERDAS 2010
MapInfo Professional 8.5
XMap 5.0
Adobe Illustrator
Carte Et Donnés
MapViewer 5.0

COURSE DESCRIPTION

This course introduces the basic concepts and techniques for the manipulation, the graphic representation of spatial information, and limited analysis. The course examines the processing, compilation and symbolization of spatial data and the application of related statistical techniques. Emphasis is placed on the technology of mapping, particularly computer mapping (including visualization and web mapping), in the context of Geographic Information Systems.
This course has two closely related components: the lectures and the labs. Topics discussed during lectures will be demonstrated during the labs. In addition, lab assignments will be handed out that must be completed within a week. Labs will also consist of class tasks, take-home lab assignments, quizzes and a final project.
A D2L web page is available for the course. It is your responsibility to make often visits to this web site for important announcements and details about the course.

OBJECTIVES

At the end of this course, each student should be proficient in making maps of their choice using at least ArcMap, ArcScene, Google Map tools, ArcGIS.com and ArcGIS explorer.

Students will also be able to

- obtain, edit and assign coordinate systems to data from various sources.
- acquire first hand spatial data by digitizing, using a (GIS dedicated) GPS receiver, or a geocoding process.

In addition to mapping the mapping skills student will be free to undertake basic spatial, temporal or pattern analysis tasks.

COURSE REQUIREMENTS

Although there is no prerequisite, student are encouraged to complete Geog 102 or 121 prior to taking this class.

Grades will be assigned using a combination of two (2) exams and laboratory assignments (including quizzes and a final project). Attendance is required (see requirements below).

ATTENDANCE REQUIREMENTS

Attendance is required for both the lab and lecture components of the course. Absence from 2 lecture or 2 labs without prior consent of instructor will result in the deduction of 2 points from the total points for every class missed.

If you are absenting for any **VALID** and **DOCUMENTED** reason, please call or email the instructor. You are responsible for making up missed work promptly and having assignments prepared for the following class.

EXAMS, QUIZZES AND GRADING POLICY (undergraduate)

Two equally weighted exams are scheduled in this course. The exams are non-comprehensive and will cover material in the preceding unit of study.

There will also be **quizzes** during the semester. Quizzes will be given at the beginning or at the end of a class. The final grade in the course will be determined on the basis of the student's performance on the exams, Labs, quizzes, and final project. There is a total of 200 points.

Quizzes……. 20 pt.
Lab exercises ……. 20 pt.
Project Proposal…… 5 pt
Project Proposal Presentation…… 5 pt
Lab quiz/exam ……10
Lab Assignments…… 30/50 pt
First Mid-term Exam…….…….. 40 pt.
Second Mid-term Exam...……... 40 pt.
Final Presentation and Report..……..…….. 10 pt.

The following scale will be used in determining the final grade:

Grade	Points	Percentage
A	190 =< x	95=< x
A-	183 =< x < 190	91.5 =< x < 95
B+	176 =< x < 183	88 =< x < 91.5
B	169 =< x < 176	84.5 = < x < 88
B-	162 =< x < 169	81 =< x < 84.5
C+	155 =< x < 162	77.5 =< x < 81
C	148 =< x < 155	74 =< x < 77.5
C-	141 =< x < 148	70.5 =< x < 74
D+	134 =< x < 141	67 =< x < 70.5
D	127 =< x < 134	63.5 =< x < 67
D-	120 =< x < 127	60 =< x < 63.5

COURSE OUTLINE

Dates	Topic	
Week 1	Introduction to the course / Cartography and GIS	
Sept.	Map Projections and Coordinate Systems	
5-7	Lab 1 Introduction to the GIS lab and lab policies	
	Introduction to ArcCatalog ArcMap	
Week 2	Map Projections and Coordinate Systems	
Sept.	Data Models	Chapter 10
10-14	Lab 2 Using ArcGIS/Arctoolbox Projection Utility	
	Assignment 1: Map Projection	
Week 3	Data Measurement	Chapter 10
Sept.	Data Measurement	Chapter 16
17-21	Lab 3 Analyzing spatial and tabular data	
	Introduction to tables and grid image in ArcGIS	
Week 4	Data Display and Cartography (map elements, symbol, and visual variables)	
Sept.	Thematic Cartography	
24-28	Lab 4 Layout in ArcGIS	
Week 5	Thematic Cartography (continues)	
Oct.	Lab 5 Displaying thematic maps in ArcMap	
1-5	**Examination 1**	
Week 6	Cartographic Design	
Oct.	Lab 6 Exploring mapping tools	
8-12	**Assignment 2: Cartographic design**	
Week 7 13	Cartographic Design (Continues)	
Oct.	Lab 7 Exploring additional mapping tools	
15-19	Lab: Creating an atlas in ArcMap	
	Assignment 2: Index Map /Atlas	
Week 8	Terrain Mapping and 3D Mapping	
Oct.	Spatial Interpolation	
22-26	Lab 8 Using a DEM in ArcMap and ArcScene (3D analyst)	
	Mapping campus structures (3D analyst)	
	Interpolation with ArcMap	
Week 9	Data Acquisition	
Oct. 29	Map Digitizing	
Nov. 2	Lab 9 Internet data sources, scanning, ArcGIS.com (online)	
	Georeferencing and Digitizing exercise	
	Term project's subject due	
Week 10	**Midterm Presentation** ***Project proposal due***	
Nov.	Geocoding	
5-9	Lab 10 addresses matching, plotting lat-long coordinates, Hot links	
	Assignment 3: Map Request	
Week 11	Internet/web Mapping	
Nov.	**Exam 2**	
12-16	Lab 11 ArcGIS Explorer / ArcGIS.com / ArcGIS Server Google Map	
Week 12	Global Positioning Systems (GPS)	
Nov. 19-23	Lab 12 Using the Juno receiver: Data dictionary, information transfer, data collection	

Thanksgiving break (November 21-25)

Week 13 Animation
Nov. 26-30 Lab 13 ESRI tutorial tasks on animation

Week 14 Term Project and Discussion / **Project presentations**
Nov.

Week 14 Term Project and Discussion / **Project presentations**
Nov.

GRADUATE STUDENTS

Graduate students who enrolled in this class should expect extra reading, lab exercises and lab assignments. They will also have to answer more questions during quizzes and exams. For their semester project, they are expected to work as partners with other graduate students (or alone). Their projects should be more advanced and substantial using real (not made up) data. The projection and data source of each layer used in project should be provided. Newly created data layers should have a metadata. Their project report should include references and figures with caption. There is a total of 250 points.

Quizzes……. 30 pts.
Lab exercice ……. 30 pts
Project Proposal…… 10 pts
Project Proposal Presentation…… 10 pts
Lab Assignments…… 50 pts
First Mid-term Exam…….…….. 45 pts
Second Mid-term Exam...……... 45 pts
Final Presentation and Report..……..…….. 30 pts

The following scale will be used in determining the final grade:

Grade	Percentage
A	95=< x
A-	91.5 =< x < 95
B+	88 =< x < 91.5
B	84.5 = < x < 88
B-	81 =< x < 84.5
C+	77.5 =< x < 81
C	74 =< x < 77.5
C-	70.5 =< x < 74
D+	67 =< x < 70.5
D	63.5 =< x < 67
D-	60 =< x < 63.5

SPECIAL ANNOUNCEMENT

I would like to hear from anyone who has a disability, which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please see me after class or during my office hours.