

University of Wisconsin-Milwaukee
Department of Anthropology

Course #	Title	Crts
156-562	Techniques and Problems in Archaeology: Advanced Digital Mapping (U/G)	3

Prerequisite: Anthropology class; Junior standing; Instr cons. A basic understanding of geographic information systems will be useful but not necessary.

Instructor	TA
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Office Hours: Mon 12:15-2:00	Office Hours: Mon 1-2pm, Fri 12-1pm

Lecture Time and Location

Lecture	Labs
Location: Sabin 149	Location: Sabin 240
Time: Mon 9:30-12:10	Time: Thurs 1:00-3:20pm
	Fri 1:00-3:20

Course Description

This course is designed to introduce students to basic concepts of surveying, map interpretation, compilation and production. General cartographic principles will be discussed but the course is designed to introduce students to the collection, integration, analysis and display/production of data digitally using GIS.

AN 562 is not intended to replace courses in basic cartography, computer assisted mapping, geographic information systems or plane surveying. However, students will be introduced to interpretation of topographic maps and aerial photographs, basic land surveying principles, and computer based data collection and production of maps.

Course Objectives

Students who successfully complete this course will with the experience in solving common mapping problems. Class participants will be bale to:

- 1) Read, Interpret and compile maps
- 2) Use total station to collect data
- 3) Use GPS to collect data
- 4) Incorporate historical maps and data into GIS project

- 5) Produce digital maps and supporting documentation of completed project using ArcGIS, geodatabase, and collected digital data

Required Readings Required readings will be selected from the list provided below and need to be completed before the beginning of each class. Additional readings will be provided on e-Reserve or by the course instructor as needed.

REQUIRED READING LIST

Conolly, J. and M. Lake

2006 *Geographical Information Systems in Archaeology*. Cambridge Manuals in Archaeology. Cambridge University Press, Cambridge.

McPherron, S. P. and H. L. Dibble

2002 *Using Computers in Archaeology*. McGraw-Hill.

SUPPLEMENTAL READING LIST

Additional readings will be made available throughout the semester.

Assignments and Grading

The course will follow the outline, readings and syllabus provided. Additional topics and readings may be added as deemed appropriate by the instructor based on class interest and need. Several in-class labs will be developed to familiarize participants with GIS software, datasets, and concepts. Grades will be determined based on a combination of lab assignments, class participation, a midterm exam, and completion of a class project. Class participants should be able to complete most of the lab assignments during the allotted class and lab periods.

Class Project: The final class project will consist of a mapping project identified by the instructor. Class participants will employ the topics covered in lecture and lab to aid them in completing the final project. Class participants will work in teams. The majority of the final project data collection will require the students to work outside.

Grades for the course will be determined based on the following:

1. Exam (30% of grade) – There will be one midterm exam for this course.
2. Class participation (10% of grade) – Participation in class discussions provides another means for the instructor to assess an undergraduate student's understanding of the readings and the lecture material.
3. Lab assignments (40% of grade) – Lab assignments will be given relating to class topics. Lab assignments will assigned during “hands-on” portions of the class and will require use of ArcGIS to complete. In most cases, lab assignments can be completed during the designated class periods.
4. Final class project (20% of grade) – Every undergraduate student is expected to identify and complete a class project to be completed by the end of the semester. Undergraduate students will need to meet with the instructor to discuss individual class projects and present a formal proposal as outlined in the syllabus. Final projects will be in the form of a poster.

Graduate Students

To satisfy the Graduate School conditions for UG/G courses, all graduate students are required to fulfill an additional requirement. Graduate students will also have to produce a presentation of the final project that will include the following:

- Final project map
- Data collected
- Where data was obtained
- What modifications of the data was needed (if any)
- Discussion of analysis conducted
- Problems encountered

Undergraduates may also produce a presentation for 10 extra credit points but must follow the same presentation criteria as the graduate students as indicated above.

Course Outline, Reading Assignments, Exams, and Lab Assignments

Week	Date	Topics	Reading Assignment	Lab Assignment
Week 1		<ul style="list-style-type: none"> • Course Overview • Introduction to Maps and Maps in Archaeology • Locational Systems 	•	Lab 1
Week 2		<ul style="list-style-type: none"> • Topographic Map Interpretation • Archaeological Survey • GIS in Archaeology 	<ul style="list-style-type: none"> • Conolly and Locke 3 • Supplemental Readings 	Lab 2
Week 3		<ul style="list-style-type: none"> • Remote Sensing • Aerial Photography • Satellite Imagery 	<ul style="list-style-type: none"> • Lyons and Avery • Supplemental Readings 	Lab 3
Week 4		<ul style="list-style-type: none"> • Remote Sensing – Continued • Historic Maps and Geo-rectification 	• Supplemental Readings	Lab 4
Week 5		<ul style="list-style-type: none"> • Spatial Data Acquisition • Geodatabase Concepts, Development and Design 	<ul style="list-style-type: none"> • Conolly and Locke 4, 5 • Arctur and Zeiler 2, 9 	Lab 5
Week 6		<ul style="list-style-type: none"> • Geodatabase Concepts, Development and Design 	• Arctur and Zeiler 2, 9	Lab 6
Week 7		<ul style="list-style-type: none"> • Archaeo-trigonometry • Projections and Coordinate Systems 	• Greenhood	Lab 7
Week 8		<ul style="list-style-type: none"> • Global Positioning Systems 	• Steede-Terry	Lab 8
Week 9		<ul style="list-style-type: none"> • Midterm Exam • Introduction to Mapping Concepts • Total Stations and Data Controllers 	<ul style="list-style-type: none"> • Greenhood • Fowler and Flick 	Lab 9
Week 10		SPRING BREAK – NO CLASSES		

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Week 11		<ul style="list-style-type: none"> • Mapping Concepts – Continued • Total Station 	<ul style="list-style-type: none"> • Greenhood • Fowler and Flick 	Lab 10
Week 12		<ul style="list-style-type: none"> • Data Integration with GIS 	<ul style="list-style-type: none"> • Conolly and Locke 12, 13 	Lab 11
Week 13		<ul style="list-style-type: none"> • Spatial Analysis • Surface and Terrain Models 	<ul style="list-style-type: none"> • Conolly and Locke 6,7,8 	Work on Final Project
Week 14		<ul style="list-style-type: none"> • Spatial Analysis – Continued • Networks, Cost paths, Catchments 	<ul style="list-style-type: none"> • Conolly and Locke 10, 11 	Work on Final Project
Week 15		<ul style="list-style-type: none"> • Archaeological Site Mapping 	<ul style="list-style-type: none"> • Supplemental Readings 	Work on Final Project
Week 16		<ul style="list-style-type: none"> • Maps and Digital Cartography • Maintaining Spatial Data 	<ul style="list-style-type: none"> • Conolly and Locke 12, 13 	Work on Final Project
Week 17		<ul style="list-style-type: none"> • FINAL EXAM WEEK • Presentations of Projects 	<ul style="list-style-type: none"> • 	Final Project due

Additional Class Information

- See <http://www.uwm.edu/Dept/SecU/facdocs/1895A.pdf> for information UW-Milwaukee course syllabus policy.
- Students are expected to conform to ethical guidelines for all course work. This includes all in-class work as well as written and take home materials. Additional information about the University of Wisconsin-Milwaukee policies and procedures regarding student misconduct may be found at http://www4.uwm.edu/Dept/Acad_Aff/policy/academicmisconduct.cfm
- Attendance is required.
- Although some student collaboration is expected, students are expected to attend each class and are responsible for taking their own notes, and are responsible for all partner and group based projects.
- No make-ups will be given without an accepted excuse.