

UNIVERSITY OF NORTHERN COLORADO  
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES  
OFFICE OF EXTENDED STUDIES  
**TENTATIVE SYLLABUS**  
Summer 2012

Geography 210 – *Introduction to GIS and GPS*.

Instructor: TBD

3 credit hours.

**Disability Statement**

Any student requesting disability accommodation for this class must inform the instructor giving appropriate notice. Students are encouraged to contact Disability Support Services at (970) 351-2289 to certify documentation of disability and to ensure appropriate accommodations are implemented in a timely manner.

**The Office of Extended Studies reserves the right to cancel or reschedule courses based upon enrollment. Enrolled students will be contacted with information of any change.**

Course Fee: Please note that there is a course fee for this course.

Textbooks: none. Readings will come from a number of sources, including:

ESRI Virtual Campus Course. *Learning ArcGIS Desktop*. (10.0)

<http://training.esri.com>.

Natural Resources Canada. 2009. *Fundamental of Remote Sensing*.

[http://www.ccrs.nrcan.gc.ca/resource/tutor/fundam/index\\_e.php](http://www.ccrs.nrcan.gc.ca/resource/tutor/fundam/index_e.php)

Trimble 2010 <http://www.trimble.com/gps/index.shtml>

GPS [http://en.wikipedia.org/wiki/Global\\_Positioning\\_System](http://en.wikipedia.org/wiki/Global_Positioning_System)

Welcome to *Geography 210 – Introduction to GIS and GPS*. This course will expose students to the fundamental concepts and application techniques used in Geographic Information Systems (GIS) and Global Positioning Systems (GPS).

The GIS portion of the course will examine basic aspects of map production, use, and especially spatial analysis. You will learn how to use GPS units and techniques to process locational data. In addition, we will spend time on using satellite imagery in a GIS.

**Course Objectives**

Enhance Critical Thinking skills within the context of the broader science of Geographic Information Science:

- GIS as a platform for conceptual modeling
- Spatial thinking skills as a way to deepen our understanding of the relationships that exist in the world the complex problems facing society.
- Develop an understanding of the cross-disciplinary nature of GIS and GPS technologies. Most weeks you will be exposed to a min-case study of how GIS and/or GPS is used in various fields.

Enhance Competency in GIS and GPS Technologies:

- Use basic GIS concepts to create and edit geographic data.
- Perform basic spatial analysis using queries, geoprocessing tools, and models.
- Use *ArcGIS* software to symbolize, label and design presentation-quality maps.
- Understand the basic principles of GPS satellite navigation and differential correction.
- Collect and Correct GPS point/coordinates and transfer these points into *ArcGIS*
- Basic knowledge of satellite remote sensing and applications in GIS and GPS.

Grades will be determined according to the following formula:

Exam #1	22%	Project	<u>12%</u>
Exam #2 (Final)	26%	Total	100
Labs (assignments)	40%		

Your final course grade will be assigned according to the following scale (total % of points out of 420pts.):

Grade	Percentage
A	93-100%
A-	90-92.99%
B+	87-89.99%
B	83-86.99%
B-	80-82.99%
C+	77-79.99%

C	73-76.99%
C-	70-72.99%
D+	67-69.99%
D	63-66.99%
D-	60-62.99%
F	Below 60%

During the semester 11 labs will be assigned (you get to drop your lowest lab score). Seven of these labs will come from the ESRI Virtual Campus course: *Learning ArcGIS Desktop*. This course normally costs \$200. UNC has an ESRI site license which means you will get the class free. In addition you will have a number of GPS labs and a remote sensing lab. Late labs are decreased by 10% per day (not class day). In total, all labs will account for 40% of your course grade. Remember—you can always turn in labs early. Knowing the lab material will be crucial for doing well on the exams. Due dates for each lab will be provided at the time you receive the lab.

Two exams will be given (48% of total grade). The exams will cover class lectures, ESRI *Learning ArcGIS Desktop* readings, and the other online reading assignments.

During the semester you will complete a simple GPS project (12% of grade). This will require that you plan your project, collect the data coordinates to be mapped, import the data into *ArcGIS*, and create a quality presentation of the data.

### Attendance/Policies

Attendance is required. Please note that Incompletes are only given according to university regulations, which states: *An "I" is assigned due to unanticipated circumstances the last week of the term . . . due to sickness, an emergency in the family.* No video or audio recording of lectures is permitted without the permission of your instructor.

**FINAL EXAM.** You must take the final exam at the scheduled time. If you have another scheduled exam at the same time then you must submit proof of the other exam. An essay makeup exam will then be scheduled. YOU MUST complete these steps AT LEAST two weeks prior to the final class meeting.

### Academic Misconduct

Academic misconduct includes but is not limited to plagiarism, cheating, fabrication, and knowingly or recklessly encouraging or making possible any act of plagiarism, cheating, or fabrication. The penalty for academic misconduct can range from failure on the assignment or exam to failure of the entire course.

### Tentative Outline of Course Content Note: Additional readings WILL be assigned

Introduction to GIS and GPS. What is ArcGIS?

Mini-Case Study: Applications in Criminal Justice

Lab#1 *Learning ArcGIS Desktop (Module 1)*

Understanding Map Projections and Coordinate Systems

Mini-Case Study: Applications in Marketing

Lab#2 *Learning ArcGIS Desktop (Module 2)*

Coordinate Systems Continued; Organizing Geographic Data

Mini-Case Study: Applications in the Geology

Lab#3 *Learning ArcGIS Desktop (Module 3 and 4)*

Creating and Editing Data in ArcGIS

Mini-Case Study: Applications in Education—Where will you go to School

Lab#4- *Learning ArcGIS Desktop (Module 5)*

Basic GIS Analysis

Mini-Case Study: Applications in Archaeology: Finding Sacred Sites.

Lab#5- *Learning ArcGIS Desktop (Module 6)*

Geoprocessing and Using Model Builder  
Mini-Case Study: Applications in Statistics—Using Regression in GIS  
*Lab#6- Learning ArcGIS Desktop (Module 7)*

GPS Overview/Exam Review  
**Exam #1**

Global Positioning System Overview: Space Segment (Reading:  
<http://www.trimble.com/gps/index.shtml> and)  
*Lab7: Basic GPS Use, Orienteering!*

Error in GPS; Pathfinder Software: Creating a Data Dictionary  
Mini-Case Study: Cell Phone location??  
*Lab#8: Mapping UNC Features in TerraSync*

Correcting for GPS Error; Mission Planning.  
Mini—Case Study: Google Maps; how does that work?  
*Lab#9: Post-processing and Bringing your Data into ArcGIS*

Mission Planning; *Project Work*  
*Project Work*

Map Design  
Mini—Case Study: The Art in GIS!  
*Lab 10: Learning ArcGIS Desktop (Mod. 8)*

Project Work  
*GPS Project DUE (Nov. 17, beginning of class)*

Space based Remote Sensing\Introduction (Reading: Natural Resources Canada. 2009. *Fundamental of Remote Sensing*. [http://www.ccrs.nrcan.gc.ca/resource/tutor/fundam/index\\_e.php](http://www.ccrs.nrcan.gc.ca/resource/tutor/fundam/index_e.php) (selected sections)  
Mini—Case Study: Environmental Degradation and Remote Sensing in the Amazon.  
*Lab#11 Remote Sensing and Basic Image Processing.*

Digital Image Processing  
Final Exam Review

FINAL EXAM (which is Exam #2--*comprehensive*)

### **Library Services for Distance Education and Off-Campus Students: Obtaining Materials from UNC Libraries**

Off-campus students residing within 50 miles of the UNC campus are required to come to the library and borrow materials in person. Students residing more than 50 miles from campus may request that materials be delivered to them. All requests must include complete citations. We will supply materials from the UNC Libraries, as well as materials from other libraries obtained via Interlibrary Loan. Articles will be delivered via email. Books will be mailed first class. Delivery time by U.S. postal service is approximately 1 week. It is the responsibility of the student to return books by the date due. UNC does not pay return postage on books. For information on document delivery, call (970) 351-1446.

Requests for materials may be made through the following methods:  
Online: <http://www.unco.edu/library/forms/distancequest.htm>  
By email: [library.ocp@unco.edu](mailto:library.ocp@unco.edu)  
By fax: (970) 351-2540

**UNC's Policies**

UNC's policies and recommendations for academic misconduct will be followed. For additional information, please see the Dean of Student's website, Student Handbook link <http://www.unco.edu/dos/handbook/index.html>

**The Office of Extended Studies reserves the right to cancel or reschedule courses based upon enrollment. Enrolled students will be contacted with information of any change.**

**WITHDRAWALS AND REFUNDS:** In accordance with University and Colorado Commission on Higher Education policy, if you drop from this class after the course starts you will be assessed a withdrawal fee. The drop fee is pro-rated up to the half-way point in the class. You are legally responsible for payment of full tuition once 50% of this course has been concluded. In order to be eligible to receive any refund of tuition, you must contact the Office of Extended Studies at 1-800-232-1749 to formally withdraw from your class. Your refund, if applicable, will be based on the date of contact with our office. Withdrawals received via telephone during non-business hours will be processed and dated on the next working day. Failure to notify us will result in UNC tuition being owed even though student did not attend or complete the coursework.