

**The University of North Carolina – Asheville**  
**Department of Atmospheric Sciences**  
*Syllabus For:*  
**ATMS 373-02 – GIS in Meteorology (3)**  
**MW: 11:25am – 12:40pm**

**Instructor:** J. Greg Dobson

**Phone:** 251-6973

**Classroom / Lab:** RH 238

**Email:** [gdobson@unca.edu](mailto:gdobson@unca.edu)

**Office:** Rhoades Hall 201F

**Mail Box:** Rhoades Hall 201

**Office Hours:** By Appointment M/W

**Class Blog:** <http://atms373.blogspot.com/>

**Class Google Group:** <http://groups.google.com/group/atms-373/web>

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### **PREREQUISITES**

None. However, basic computer literacy is necessary.

### **COURSE DESCRIPTION**

This course will introduce students to the field of Geographic Information Systems (GIS) and demonstrate its applications to meteorology, climatology, and hydrology. Through a series of lectures and computer lab exercises, students will gain an understanding of basic GIS theory and principles, software, and data formats. Students will learn how to use ArcGIS software to integrate and incorporate a variety of weather and climate data into GIS-based atmospheric science applications to assist with analysis, decision-making, and cartography. This class will also introduce basic GIS 3D visualization using weather data.

### **REQUIRED TEXTBOOK**

*Getting to Know ArcGIS desktop. Basics of ArcView, ArcEditor, and ArcInfo.* Second Edition, updated for ArcGIS 9. ESRI Press. Copyright 2004. ISBN: 1-58948-083-X.

- Errata for Getting to Know ArcGIS Desktop 9.2:  
[http://gis.esri.com/esripress/shared/images/87/GTKAD9.2\\_Updates.pdf](http://gis.esri.com/esripress/shared/images/87/GTKAD9.2_Updates.pdf)
- This document provides errata for people who want to perform the exercises in Getting to Know ArcGIS Desktop, Second Edition using ArcGIS Desktop version 9.2 software. The errata include changes to the user interface and changes to exercise instructions. A few exercises have been replaced in their entirety because software changes necessitated extensive modifications to exercise steps or workflows.

## **SUGGESTED SUPPLIES**

**Software:** ArcGIS 9.2 (180 day ArcView license comes with the lab book for this course).

**Hardware:** USB Portable Flash Drive – 1 Gigabyte minimum recommended.

A computer capable of running ArcGIS or willingness to do all outside work in school lab. The recommended system requirements for ArcGIS from ESRI are a Pentium computer with a 1 GHz processor, 512 MB RAM, and approximately 700 MB of free disk space. *My personal experience is that you need to double that amount of RAM to 1 Gigabyte – at least.*

## **COURSE OUTCOME GOALS**

- Basic knowledge and understanding of GIS and Geospatial theory, principles, and applications.
- Become fluent in GIS and Geospatial terminology.
- Understanding of data formats and data models (vector vs. raster).
- Demonstrate competency and familiarity with ArcGIS Desktop software.
- Knowledge of data sources, data entry, and data creation.
- Be able to manipulate, geoprocess, convert, and query data.
- Basic understanding of projections and coordinate systems.
- Demonstrate basic cartographic skills by creating effective maps.
- Be able to display data effectively through symbolization, classification, and labeling.
- Understand attribute data and tables.
- Basic utilization of the ArcGIS “Spatial Analyst” and “3D Analysts extensions”.
- Be able to use Google Earth software as a GIS platform.
- Understand the integration between Google Earth and ArcGIS software through data conversions.
- Understand NOAA and NWS GIS data standards.
- Be able to integrate weather and climate data into a GIS.
- Be able to analyze weather and climate data with GIS.
- Understanding of basic 3D Visualization of weather and climate data with GIS and Geospatial software.

## **CLASS SCHEDULE AND IMPORTANT DATES**

Class will meet every Monday and Wednesday from 11:25am - 12:40pm with the following exceptions:

- Monday, Jan. 21st – Holiday
- Wednesday, Feb. 13<sup>th</sup> – Open Lab
- Monday and Wednesday, March 3<sup>rd</sup> and 5<sup>th</sup> – Spring Break
- Monday, April 29<sup>th</sup> – Last Class Meeting

The Final Exam will be on May XX. Details to follow.

## **METHODS OF EVALUATION**

During the course you will be required to demonstrate your knowledge and skills in a variety of ways including traditional written tests, hands-on performance, and completion of projects and lab assignments that simulate real world working situations.

### ***Final Grading:***

Test 1 - 15%  
Test 2 - 15%  
Final Exam - 20%  
Final Project - 20%  
Quizzes - 10%  
Lab / Homework Assignments - 20%

### ***Grading Scale:***

93 – 100	= A
91 – 92	= A-
89 - 90	= B+
83 – 88	= B
81 – 82	= B-
79 – 80	= C+
73 – 78	= C
71 – 72	= C-
69 – 70	= D+
61 – 68	= D
0 – 60	= F

### ***Quizzes:***

Announced quizzes will be given through out the semester to help the student gauge their understanding of the weekly lecture and lab material. The lowest quiz score will be *dropped* and not count toward the final course grade.

### ***Lab / Homework Assignments:***

Lab and homework assignments will consist primarily of lab exercises using GIS software. The end product of these exercises will vary from screen captures, maps, questions about the data, etc. Each student will hand in his or her own assignment. Assignments to be handed in are to be printed out unless otherwise instructed.

### ***Tests / Final Exam:***

Tests and the final exam will be written and will consist of short answer, multiple choice, and fill in the blank. The final exam WILL BE comprehensive.

### ***Assignments and Tests - Make-up Policy:***

Late assignments are discounted 25% and will not be accepted later than 1 class meeting after the due date. No missed test will be excused unless you inform your instructor before the test. E-mail is available 24 hours a day, 7 days a week; therefore, you will be expected to make this effort.

### ***Final Project:***

Details on the final project are to be announced.

### **ATTENDANCE POLICY**

Regular class attendance is necessary in order for you to receive the maximum benefit from your education and to develop professional work habits of responsibility, dependability, and self-direction which are all highly valued by employers in today's competitive workplace.

Please notify the instructor of your absence. You may e-mail or leave a voice mail message. If it becomes necessary for you to withdraw from class, you must bring the appropriate form for the instructor to sign. For more information, see the Student Handbook.

### **DISABILITIES**

Let the instructor know early in the semester if you have a disability that requires special accommodations.

### **ACADEMIC INTEGRITY**

Cheating or plagiarism results in a failed assignment, quiz, or exam on the first infraction. A second infraction results in course failure and a report to the UNCA administration. See <http://www.unca.edu/catalog/academicregs.html> under "Student Responsibilities" for a refresher on the UNCA policy.

### **HOW TO APPROACH THIS CLASS**

This is a 3-credit class. You should expect to spend 1 – 2 hours outside of class for every lecture hour put into normal classroom time in order to master this material. This time estimate depends on student's prior computer skills and knowledge of the subject matter. I encourage the student not to rush through the lab exercises, rather think about what is happening. ***If you are having problems or get behind, contact me immediately and let me know. Communication between the instructor and student is key to everything we do. If I don't know anything is wrong, I can't help.***

### **OTHER**

- Manage your digital information logically and consistently and **MAKE A REGULAR BACK-UP!!**