

ERE 310
ENVIRONMENTAL MEASUREMENTS AND SPATIAL INFORMATION

COURSE SYLLABUS

INSTRUCTOR:

Lindi Quackenbush	Office location: 310A Bray Hall (mailbox in 312 Bray Hall)
Phone: 470-4727	URL: http://www.esf.edu/erfeg/quackenbush/
E-mail: ljquack@esf.edu	Office hours: Mon/Wed 9:00 – 10:00; Tue 2:00 – 3:00

TEACHING ASSISTANT:

Amanda Baldauf	Office location: 411 Bray Hall (mailbox in 312 Bray Hall)
Phone: 470-4758	
E-mail: acbaldau@syr.edu	Office hours: Mon 2:00 – 4:00; Tue 10:00 – 11:20

TEXTS:

Map Use and Analysis (4th Edition) John Campbell (available at Orange Bookstore)
Interpretation of Aerial Photographs, Crisco (handout in class)

COURSE DESCRIPTION:

This course provides an introduction to the fundamental concepts required for properly collecting data and information about environmental variables. The course emphasizes the collection of spatial information through interpretation and review of maps, and aerial photographs and other imagery, and through field surveying procedures.

COURSE OBJECTIVES:

At the conclusion of the course, students should be able to:

1. Measure a range of environmental variables;
2. Properly use measured information, including quality assessment;
3. Classify the important systems used to describe location on the earth;
4. Interpret and analyze maps to collect environmental information;
5. Use elementary remote sensing and photogrammetric techniques to acquire environmental information;
6. Understand plane surveying procedures for data collection and mapping.

COURSE REQUIREMENTS:

Lecture: Two hours of lecture per week: 11:30 AM – 12:25 PM Tuesday and Thursday, Baker Lab room 139. Reading assignments will be made regularly throughout the semester. Homework assignments (not graded) will provide practice problems to support the exam material. Three hour exams will be held during the semester.

Laboratory: Three hours of laboratory per week: 1:55 PM – 4:55 PM Wednesday, Bray Hall rooms 315/12. A scientific calculator and a hard pencil (3H or harder) should be brought to all lab meetings. The lab exercises contribute substantially to the overall work load in the course. The lab exercises should be completed with a high degree of professionalism. A portion of the lab grade will be based on professional appearance. Preparatory reading assignments for each lab exercise are listed in the Lab Schedule.

GRADING:

3 exams	50%
Laboratory exercises	50%

A final exam will be offered during the scheduled final exam period. This exam will cover material from the entire semester. Four exams are offered for this course: three hour exams and the final exam. If all four exams are taken, then the highest three grades will be recorded. If an hour exam is missed during the semester, you will be required to take the final.

The three exam grades and the lab exercise grades will be averaged to provide a final numerical score. The letter grade will be defined according to the following table:

LETTER GRADE	RANGE OF NUMERICAL GRADE
A	90+
A-	87 – 89
B+	84 – 86
B	81 – 83
B-	78 – 80
C+	75 – 77
C	72 – 74
C-	69 – 71
D	60 – 69
F	< 60

COMPUTER USAGE:

Word processing and spreadsheet software packages are considered basic tools in modern life. Many lab exercises will require submissions that use these fundamental packages.

E-mail will be used as a common means of communicating outside class times. Students should provide Lindi Quackenbush with an e-mail address. All students have access to an e-mail account through the Syracuse University SUnix system. The World Wide Web will be used for providing information about the course and will also be used for searching for information during some lab exercises. Computer clusters at ESF and at SU provide access to the Internet for those who do not have

home access. Lab exercises that require extensive Internet searches are best performed with a fast connection.

CLASS ABSENCE:

If you encounter a situation beyond your control in which you will be missing 3 or more days of classes, you can contact the Office of Student Life (110 Bray, 315-470-6660) and they will contact all your instructors for you. Supportive documentation may be required.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:

If you have an identified disability and will need accommodations, you should contact Tom Slocum in the Office of Student Life in 110 Bray Hall. He will discuss the ESF process and work with you to access supportive services. If you have a learning disability, the College will require you to provide supportive documentation and will develop an approved accommodation sheet for you. Accommodations cannot be provided until the accommodation sheet is established and we meet to discuss its applicability to this course. Accommodations cannot be established retroactively.

**ENVIRONMENTAL MEASUREMENTS AND SPATIAL INFORMATION
LECTURE SCHEDULE**

SUBJECT	DATE	LECTURE TOPIC	
<i>Introduction</i>	14 Jan	Environmental information and measurements	
<i>Principles of Measurement</i>	16 Jan	Fundamental concepts; Elementary probability and statistics	
	21 Jan	Additional concepts	
	23 Jan	Subsequent use of measured data	
<i>Map Understanding and Analysis</i>	28 Jan	Introduction	
	30 Jan	Map geometry	
	4 Feb	Map accuracy	
	6 Feb	Map interpretation	
EXAM 1	11 Feb	<i>Through Map Understanding & Analysis</i>	
<i>Remote Sensing and Photogrammetry</i>	13 Feb	Fundamental principles	
	18 Feb	Photographic imagery	
	20 Feb	Geometry of aerial photographs	
	25 Feb	Simple measurements on aerial photographs	
	27 Feb	Basic photogrammetry	
	4 Mar	Interpretation of aerial photographs	
	6 Mar	Digital imagery	
	11 Mar	No class – SPRING BREAK	
	13 Mar	No class – SPRING BREAK	
	18 Mar	Satellite remote sensing	
	20 Mar	Digital image analysis	
	EXAM 2	25 Mar	<i>Remote Sensing and Photogrammetry</i>
	<i>Surveying And Mapping</i>	27 Mar	Introduction
1 Apr		Horizontal distance measurement	
3 Apr		Vertical distance measurement	
8 Apr		Traversing to establish map control	
10 Apr		Traverse computations	
15 Apr		Traverse computations and mapping	
17 Apr		Mapping	
22 Apr		Position description	
24 Apr		Issues in mapping	
EXAM 3		29 Apr	<i>Surveying and Mapping</i>

**ENVIRONMENTAL MEASUREMENTS AND SPATIAL INFORMATION
LABORATORY SCHEDULE**

DATE	LABORATORY EXERCISE	PREPARATORY READINGS
15 Jan	Introduction to Lab and Sources of Environmental Information	
22 Jan	Measurements	
29 Jan	Analysis of Measurements	
5 Feb	Map Interpretation	Campbell – Ch. 5, 6, 9, pp. 98-103
12 Feb	Map and Aerial Photograph Interpretation	Campbell – Ch. 17, pp. 63-69
19 Feb	Aerial Photograph Interpretation I	Crisko (all pages)
26 Feb	Aerial Photograph Interpretation II	Campbell – Ch. 17, Crisko (all pages)
5 Mar	Geometry of Aerial Photographs	Crisko (all pages)
12 Mar	No Lab – SPRING BREAK	
19 Mar	Digital Image Interpretation	Campbell – Ch. 17, 18
26 Mar*	Horizontal Distance Measurement*	Campbell – pp. 34-38
2 Apr*	Horizontal Angle Measurement*	
9 Apr*	Vertical Distance Measurement*	
16 Apr*	Traverse Adjustment and Plotting*	
23 Apr*	Map Data Collection*	

*Surveying exercises occur outdoors. Be prepared for unpredictable weather.