

COURSE SYLLABUS:
APPLICATION OF SPATIAL TECHNOLOGIES TO
WILDLIFE AND FISHERIES MANAGEMENT

WF 4253/6253 3 Credits Spring 2003

Department of Wildlife and Fisheries
Mississippi State University
Lecture 11:00-11:50AM Mon/Wed/Fri
118 Thompson Hall
Labs 1:00-5:00PM Mon/Tues
308A Thompson Hall

INSTRUCTOR:

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OFFICE HOURS:

Mon/Wed 10:00-11:00AM
Others by Appointment

COURSE DESCRIPTION:

This course is designed as a hands-on learning course for advanced undergraduates and graduate students. The course is designed to teach students how to develop and analyze spatial data to solve natural resource problems. Examples in the course will be based around wildlife and fisheries management predominately.

The course is generally divided into sections. The first teaches the basic use of GPS, the second teaches the basic use and development of data in GIS, and the final section teaches how to use GIS to answer questions and solve problems.

REQUIRED READINGS:

The required text for this course is available at the MSU Bookstore:
Getting to know ArcGIS desktop. 2001. ESRI Press.

Additional readings will be required for the course. Many additional readings will be on the world wide web. Links to these readings will be available on the course web site.

COURSE OBJECTIVES:

1. Understand the basics of GPS, including data collection, correction and accuracy.
2. Be able to integrate GPS into GIS.
3. Understand the basics of GIS, including importing and displaying data, querying data, and summarizing data.
4. Understand the importance of projections and datums in spatial data.
5. Understand and demonstrate the concepts of spatial analysis.
6. Demonstrate the use of GIS in problem solving.

CLASS CONTENT/ASSIGNED READINGS

Date	Topic	Readings
1/06	Class Introduction - Requirements, Spatial Technologies	
1/06	Concepts of GPS	GPS: A guide...
1/10	Error, Accuracy, Correction	Differential GPS Explained
1/13	Map Features - Data Dictionaries, Attributes	Kennedy Ch 7
1/15	Coordinate Systems - Projections	
1/17	Datums - HAE, MSL	
1/20	Martin Luther King Day - HOLIDAY	
1/22	GPS - Grouping, Exporting, Equipment types	
1/24	Concepts of GIS	Getting Ch 1-6
1/27	GIS Basics	
1/29	GIS Data Sources	
1/31	The ArcGIS Model	
2/03	ArcView Interface Overview	
2/05	Views - Making Information Presentable/Querying	
2/07	Review	
2/10	EXAM I	
2/12	Images	Verbyla and Chang Ch 1,3
2/14	Image Georeferencing	Verbyla and Chang Ch 6
2/17	Database Management - Tables	
2/19	Querying and Summarizing Data	
2/21	Editing Data	
2/24	Geoprocessing Tools	
2/26	Geoprocessing Tools	
2/28	Geoprocessing Tools	

3/03	Getting Data from the Web	
3/05	Importing Data	
3/07	EXAM II	
3/10-14	Spring Break - Have Fun	
3/17	Reprojecting Data	Extending Append B
3/19	Estimating Animal Locations	White and Garrott Ch 4
3/21	Animal Movements	White And Garrott Ch 6
3/24	Home Range Estimation	White and Garrott Ch 7
3/26	Home Range Estimation	
3/28	Habitat Analysis	White And Garrott Ch 8
3/31	Habitat Analysis	
4/02	Habitat Analysis	
4/04	Spatial Analyst	
4/07	Spatial Analyst	Extending Chs 8-14
4/09	Spatial Modeler	
4/11	Network Analyst	Extending Ch 15
4/14	3D Analyst	Extending Ch 1-7
4/16	Extensions and Scripts	Extending Ch 16-22
4/18	Easter Break	
4/21	Patch Analyst - Fragstats	Patch User Manual
4/23	Modeling	
4/25	Student Presentations	
4/28	Student Presentations	
4/30	Student Presentations	
	Final Exam	

LABORATORIES

Week of:	Topic	Assignments
1/06	No Lab	
1/13	GPS - In the Office	
1/20	No Lab - Martin Luther King Day	
1/27	GPS - Field Exercise, Differential Correction	Trimble Tutorial
2/03	ArcView Overview	GPS Layout
2/10	Photo Interpretation	ArcGIS Layout I
2/17	Photo Georeferencing	
2/24	Theme Creation - Digitizing	Referenced Photo
3/03	Tables - Chapters 13-16,20 <i>Getting to Know</i>	Cover Map
3/10	Spring Break	
3/24	Spatial Queries - Analysis - Summaries	Table Exercise
3/31	Solving Problems	Summary tables
4/07	Spatial Animal Movements - Analysis	Sample Problems
4/14	Spatial Analyst - Chapter 9-15 <i>Extending</i>	Home Range Analysis
4/21	Patch Analyst	Problem Set
4/28	Modeling	

EVALUATION:

Grading will be based on the following percentages:

	Percent of Total Grade	Points	Your Score
Exam I	20	100	_____
Exam II	20	100	_____
Exam III (Final Exam)	20	100	_____
Assignments	40	200	_____
Student Project (Grad Students)			
TOTAL:	100%	500	_____

GRADING SCALE: Final grade determination will be based on the following scale:

Undergraduates	Graduates
A \geq 90%	A = 93-100%
B \geq 80%	B = 83-92%
C \geq 70%	C = 73-82%
D \geq 60%	D = 63-72%
F < 60%	F < 63%

EXAMS:

Exams will be closed book and a combination of multiple choice, short answer, and essay questions. The exams will be cumulative because knowledge of the material covered previously will be required to advance in the course. The focus of each exam will be on the material covered in that section.

Additional Readings:

Ormsby, T., and J. Alvi. 1999. Extending ArcView GIS. ESRI Press. 527pp.

Korte, G. B. 2000. The GIS Book. 5th Ed. Onword Press. 387pp.

Verbyla D. L., and K. Chang. 1997. Processing Digital Images in GIS. 1st Ed. Onword Press. 295pp.

White, G. C., and R. A. Garrott. 1990. Analysis of Wildlife Radio-tracking Data. Academic Press, Inc. 383 pp.

M. Kennedy. 1996. The Global Positioning System and GIS: An Introduction. Ann Arbor Press, Inc. 268pp.

Hurn, J. 1989. GPS: A guide to the next utility. Trimble Navigation Ltd. 76pp.

Hurn, J. 1993. Differential GPS Explained. Trimble Navigation Ltd. 55pp.