

Louisiana Tech University

Geographic Information Systems Center



Introduction to GIS

Syllabus

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Course Objective:

To gain a basic, practical understanding of GIS concepts and applications using ArcGIS software.

By completing this course, students will:

- Gain a basic understanding of GIS concepts
- Realize the wide range of GIS applications
- Be introduced to the issues of choosing a GIS package, obtaining and evaluating GIS data, implementing a GIS and project management
- Understand the technical language of GIS
- Gain practical experience using ArcGIS (ArcMap, and ArcCatalog)
- Be introduced to GIS career options

Intended Audience:

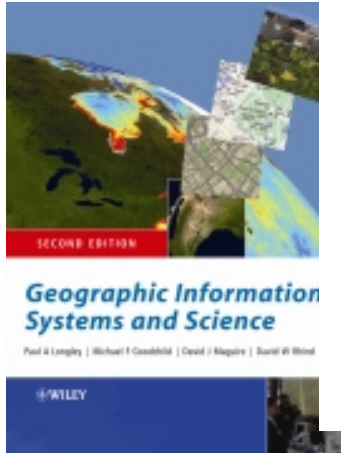
This course is designed for people who are unfamiliar with GIS, yet have basic knowledge of computers and the internet.

Prerequisites: None

Course Format:

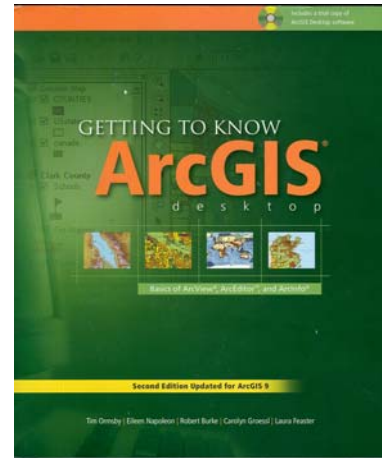
Remote Learning Section: weekly readings, lab worksheets.

Texts:



Geographic Information Systems & Science 2nd Edition

by Paul Longley et al.
John Wiley & Sons press 2005
ISBN: 047087001X



Getting to Know ArcGIS Desktop

by Tim Ormsby et al.
ESRI press 2004, 2nd Edition
ISBN: 158948083X

Software & Computer Requirements:

Computers and software are available for everyone in the GIS Center. For those taking this course remotely, an ArcGIS compatible computer as described below is required along with the ArcGIS software. An ArcGIS CD with a 90 day license for the software comes with the lab text.

System requirements for ArcGIS are:

Platform:	PC-Intel
Operating System:	Windows NT 4.0 with Service Pack 6a or Windows 2000 or Windows XP (Home Edition and Professional)
Memory:	128 MB RAM
Processor:	450 MHz

Class Schedule:

Week 1. Introduction to the course

Lecture: Orientation, course overview, definition of GIS, what it is used for, what is a map, what are its uses, brief history of GIS

Lab: Worksheet 1: Exploring GIS concepts

Overview of ArcMap and ArcCatalog buttons

Reading assignment

Lecture: Longley Ch 1, Ch 2

Lab: Ormsby Ch1, Ch 2, Ch 3, Ch4

Evaluation: Lab worksheet

Week 2. Mapping the Earth

Lecture: Issues of determining position on Earth, coordinate systems, projections, spheroids, geodetic datums

Lab: Tool Review

Worksheet 2 Review ArcMap Tools

Reading Assignment:

Lecture: Longley Ch3, Ch 5

Lab: Tool Review

Evaluation: Worksheet 2

Week 3. Digital Maps

Lecture: Representing maps digitally, types of GIS data, GIS data models, spatial relationships, scale, and topology

Lab: Data Display in ArcMap (worksheet 3)

Reading Assignment:

Lecture: Longley Ch 4, Ch 8, Ch 9

Lab: Ormsby Ch 5, Ch 6, Ch 7

Evaluation: Worksheet 3

Week 4. Spatial Query & Analysis

Lecture: Spatial Queries, Spatial Analysis

Lab: Data Query (Worksheet 4)

Reading Assignment:

Lecture: Longley Ch 14

Lab: Ormsby Ch 8

Evaluation: Worksheet 4

Week 5. Midterm

Lecture: Midterm

Lab: Map presentation – elements of a map

Reading Assignment:

Lecture: Review Longley Ch 1 – 5, 8, 9, 14

Lab: no

Evaluation: Worksheet 5
Mid Term Test

Week 6. Cartography & Visualization

Lecture: What is a good map, map elements and their use

Lab: Reports and Graphs
Managing data with ArcCatalog

Reading Assignment:

Lecture: Longley Ch 13

Lab: Ormsby pg. 215 – 222, 277-281

Evaluation: Worksheet 6

Week 7. Abstraction & Incompleteness, Data Quality & Metadata

Lecture: Abstraction and incompleteness, how to lie with maps, data quality assurance, metadata

Lab: Map projections and distance measure

Reading Assignment:

Lecture: Longley Ch 6

Lab: Ormsby Ch 13

Evaluation: Worksheet 7

Week 8. Spatial Analysis (cont.)

Lecture: Continuation of Spatial Analysis

Lab: Creating Features (worksheet 7)

Reading Assignment:

Lecture: Longley Ch 15

Lab: Ormsby Ch 15, review Ormsby Ch 13

Evaluation: Worksheet 8

Week 9. Sample GIS Implementation Case Studies

Term Project Work

Lecture: Case studies of GIS implementation

Question/Answer, review for final

Lab: Editing Data (Worksheet 8)

Reading Assignment:

Lecture: Longley Ch 17, Ch 18

Lab: Ormsby Ch 16

Evaluation: Worksheet 9

Week 10. Final Exam

Lecture: Exam over Ch 20 (Review of book) and All Lecture Notes

Lab: No

Reading Assignment:

Lecture: Longley Ch 20

Lab: no

Evaluation: Final Exam

Grading:

Lab Exercises	90 Points
Pop Quiz	10 Points
Mid Term Exam	100 Points
Final Project	100 Points
<u>Final Exam</u>	<u>100 Points</u>
Total	400 Points

80% is Passing

Assignments can be handed in at the lab, or the University Black Board System. In accordance with the Academic Honor Code, students pledge the following: “**Being a student of higher standards, I pledge to embody the principles of academic integrity**”. Help each other out, but do not copy each other’s work.

Instructor:

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Office Hours:

Monday through Friday 10:00 to 12:00