about geographic location and the effect of scale.

5) Relate computer generated output to actual landscape form and function.

Student Learning Outcomes:

Students will be able to:

1) Recognize the complexity of the biotic and abiotic interactions that influence a landscape.

2) Demonstrate a fundamental comprehension of the electromagnetic spectrum and how wavebands relate to different ecological processes by citing examples from nature.

3) Apply a conceptual framework to collect spatial data, conduct pertinent analysis, make informed management decisions, monitor results and readjust.

4) Determine the best ecological and remote sensing scale for image analysis for different natural resource management issues.

5) Demonstrate an understanding of global positioning systems (GPS) technology and its limitations and strengths especially relating to accuracy, precision and geographic scale.

6) Critically analyze GIS and remote sensing manuscripts and create a synthesis paper relating the strengths and weaknesses of the technology to accurately capture ecological functions of a landscape.

Topics to be covered:

The definition of natural resources is dualistic in meaning. In one usage, the definition can be stated as ñany material from nature having potential economic value or providing for sustenance of life,ò such as timber, minerals, oil, water and wildlife. In the second usage, the definition can be further expanded as ñenvironmental features that serve a societyôs well-being or recreational interests,ò such as parks or wilderness areas. The management of these resources is complex and multi-faceted. New spatial technologies provide resource managers with powerful tools for decision support and for monitoring the effects of ecological forces or past management actions.

Landscape ecology explores how a collection of identifiable patches, habitats or elements - such as grasslands, shrub land, forests, meadows, riparian corridors, urban, etc. - are structured, function and, furthermore, how they change with time. In this class, background information about landscape ecology, ecological processes and natural resource issues will be presented and discussed. We will examine the distribution of elements across the landscape and explore relationships between spatial position and environmental parameters. Issues involving scale and data quality will also be discussed and illustrated.

Students will analyze landscapes typical of Alaska. They will learn about GPS, basic electronic data management, and importation of files that are useful for landscape analysis, such as USGS Digital Elevation Models and Digital Line Graphs,

between landscape elements will be examined and quantified in a spatial context through watershed and landscape analyses. Electromagnetic properties of vegetation and soils will be compared and techniques to quantify differences will be tested through the use of remote sensing and vegetative indices. Spatial point analysis will be explored in the context of animal use and distribution across the landscape through examination of GPS collar data. Students will also develop land class maps from LandSat TM and Quickbird satellite imagery. Landscape patterns through time (especially as influenced by human activity) will be quantified, analyzed and displayed by comparing historic with recent aerial photography and satellite imagery.

Since landscape analysis is heavily dependent upon computer analytical techniques, students should have a familiarity with the Windows operating system and compatible computers. Students will become familiar with ESRI ArcGIS, a PC-compatible GIS software package, and Hexagon Geospatial ERDAS

Testing and grading:

One 1-hour midterm exam	100 points
One 2-hour final exam	200 points
Ten Homework Assignments	180 points
Field Trip Questions	50 points
Class Participation	70 points
Pop-Quizzes	100 points
Total	700 points

The instructor will award 5 points for each lecture based on attendance and class participation. Your attendance at all lectures is expected and would be a great ego boost. So remember that,

AN INSTRUCTOR WITH AN INFLATED EGO IS AN EASY GRADER!!!

Grading Scale: Percentage (rounded to nearest integer)

A	100 ï 90
B	89 ï 80
C	79 ï 70
D	69 ï 60
F	<60
I	Incomplete, missing assignments or tests

Plus ñ+ò and minus ñ-

UAF eLearning Student Services

Helps students with registration and course schedules, provides information about lessons and student records, assists with the examination process, and answers general questions. Our Academic Advisor can help students communicate with instructors, locate helpful resources, and maximize their distance learning experience. Contact the UAF eLearning Student Services staff at 907. 479.3444 or toll free 1.800.277.8060 or contact staff directly ï for directory listing see: http://elearning.uaf.edu/contact

Disabilities Services

The Office of Disability Services implements the Americans with Disabilities Act (ADA), and ensures that UAF students have equal access to the campus and course materials. I will work with the Office of Disabilities Servicesurs9hrhs of

NRM F369 GIS and Remote Sensing for Natural Resources

Instructor: Norm Harris

Thursday Evening 5:30 ï 8:30 PM, Location OôNeill 305

Date	Session/Laboratory Content	Readings & Assignments (points)
Jan. 18th	1 - Introduction to Natural Resources, Landscape Ecology and GIS/Remote Sensing	Chapter 1 and 2
Jan. 25th	2 - Natural Resources and Humans, Ecosystems, and Biogeography	Chapter 9
Lab 1	Data Sources and Acquisition, Import/Export Functions	Assign. 1 (10)
Feb. 1st	3 ï Natural Resource Assessment: Patches, Matrices, and Corridors / Modeling the Surface of the Land	Chapter 6
Lab 2	Digital Elevation Models (DEM) and Triangulated Irregular Networks (TIN)	Assign. 2 (20)
Feb. 8th	4 ï Scale and Resolution, Remote Sensing Platforms	Chapter 7
Lab 3	Orthorectification of Aerial Photography	Assign. 3 (20)
Feb. 15th	5 ï	