



**Section 1. Proposed Course Outline** (A general statement of course content that informs class syllabus construction. Once approved, all sections of a given course must include this content, no matter which instructor teaches the course, or the mode of delivery. Divisions must include this new course outline in the Divisional Course Outline binder as required by COPPs.)

Course Number: **GIS 249** Full Course Title for print catalog: **Raster Analysis and Remote Sensing**

Abbreviated Course Title for Banner: **Raster Analysis and Remote Sensing** (30 character limit)

Prerequisites: none

Co-requisites: none

Grade Option: ☐ Graded (with P/NP option) ☐ Pass/No Pass only

Number/Type Credits	Term Minimum Contact	Term Maximum Contact	11-Week Term Contact
__ Lecture	__ hours (lecture credits x 10)	__ hours (lecture credits x 12)	__ hours (lecture credits x 11)
<u>4</u> Lec/Lab	<u>40</u> hours (lec-lab credits x 20)	<u>48</u> hours (lec-lab credits x 24)	<u>44</u> hours (lec-lab credits x 22)
__ Lab	__ hours (lab credits x 30)	__ hours (lab credits x 36)	__ hours (lab credits x 33)
<u>4</u> Total credits (sum)	<u>40</u> Total hours (sum)	<u>48</u> Total hours (sum)	<u>44</u> Total hours (sum)

**Course Description (300 character limit):** Raster and Remote Sensing will focus on raster data analysis. Basic concepts we will explore topics such as surface interpolation (creating grids from point estimates, e.g. weather maps), topographic analysis, slope failure, distance analysis, and modeling.

## Course Outcomes and Proficiencies

What will the student **know** or **be able to do** at the end of the course?

What **attitudes** related to the subject will the student hold?

**Upon successful completion of this course, the student will be able to:**

## Assessments Planned

What evidence will demonstrate that students have achieved course outcomes? (Assessment tools may include departmental tests, written products, portfolios, juried performances, quizzes and exams, or alternative assessments such as qualitative studies, capstone projects, external reviewers, etc.)

**How each outcome will be assessed:**

Describe the fundamental of remote sensing data collection.	Student discussion and quiz.
Access and use data from a variety of sources.	Discussion, quiz, projects
Convert data types with Map algebra.	Discussion, quiz, projects
Perform surface Analysis.	Discussion, quiz, projects
Use Model Builder.	Discussion, quiz, projects
Discuss the spectral signatures of common surface feature with samples throughout the electromagnetic spectrum.	Discussion, quiz
Demonstration of capability to interpret remote sensing data.	Discussion, quiz, projects

Process and enhance satellite images to identify geological structures and vegetation coverage.	Discussion, quiz, projects
Perform unsupervised data classifications.	Discussion, quiz, projects
Convert data from multiple software platforms	Discussion, quiz, projects

## Course Content by Major Topics

What topics will be presented? What are the main activities of the course? What are the central themes? (See sample at <http://www.lanecc.edu/cops/format3.htm>.)

### Topics:

Topic One: Raster vs. Vector – What are the difference between data structures. What are the advantages and disadvantage inherent in earth type?

Topic Two: Raster Data Availability and Data Access - How is data downloaded and converted to use in various GIS systems?

Topic Three: Raster Algebra

Topic Four: Raster Analysis for Hazards

Topic Five: Remote Sensing Basics

Topic Six: Elements of Visual Interpretation

Topic Seven: Image Analysis and Classification

Topic Eight: Remote sensing of urban landscapes

Topic Nine: Remote sensing of vegetation

Topic Ten: Remote sensing of soils and geomorphology

## Section 2. Proposal Information

### Course Developer:

Lynn Songer

Date: 5/25/2011

Catalog year to take effect:

2011-2012

### Type of Proposal

☒ New course

☐ Currently 199 or 299

☐ Experimental Course

☐ 199 Special Studies

☐ 299 Trends

☐ Revised course (If increasing credits, use credit change form)

☐ Reactivated course with no change

☐ Reactivated course with changes

### Type of Course:

☐ Lower Division Collegiate (transfer)

☒ Professional/Technical (required or elective)

☐ Developmental, numbered below 100

### Rationale:

How does this proposal further the goals of the program or department?

This class supports the goals of the department by providing instruction in important emerging technologies and career skills.

What assessment evidence supports this proposal?

The National Geospatial Technology Center, supported by NSF, strongly support the addition of remote sensing to the general GIS technology curriculum.

How do you know there is a demand for this course?

The increased use of raster data models due to the release of national satellite imagery has increased the availability of these data for problem solving and decision making. Student seeking a geospatial technology career will be required to know raster analysis and how to work with remote images to create raster data.

### Section 3. Curriculum Equity (<http://www.lanecc.edu/cops/curric.htm>)

**To promote an environment where all learners are encouraged to develop their full potential, this course will support Lane's Curriculum Equity policy in the following way(s):**

This course will provide students with the skills to perform in depth analysis of socio-cultural data and spatial patterns.

### Section 4. For revised courses only: PREVIOUS Catalog/Course Information:

Course Number: \_\_\_\_\_ Course Title in Banner: \_\_\_\_\_ (30 characters maximum)

Full Course Title in print catalog:

Prerequisites:

Co-requisites:

Grade Option: ☐ Graded (with P/NP option) ☐ Pass/No Pass only

Number/Type Credits	Term Minimum Contact	Term Maximum Contact	11-Week Term Contact
__ Lecture	__ hours (lecture credits x 10)	__ hours (lecture credits x 12)	__ hours (lecture credits x 11)
__ Lec/Lab	__ hours (lec-lab credits x 20)	__ hours (lec-lab credits x 24)	__ hours (lec-lab credits x 22)
__ Lab	__ hours (lab credits x 30)	__ hours (lab credits x 36)	__ hours (lab credits x 33)
__ Total credits (sum)	__ Total hours (sum)	__ Total hours (sum)	__ Total hours (sum)

### Course Description:

What will change? ☐ Course Number ☐ Title ☐ Course Description ☐ Credit hours ☐ Contact hours

**Section 5. Support Courses (New Professional/Technical course proposals must complete.)**

Professional/Technical courses are tracked within programs for purposes of Carl Perkins funding and budgetary planning. Indicate all degree or certificate programs for which this course will be required.

Program	Division
Geographic Information Science and Technology (GIST)	Social Science

**Section 6. Overlap Courses (New course proposals must complete.)**

While overlap of course materials is not necessarily a flaw, duplication of course materials may lead to inefficient use of college resources. If there is overlap, the faculty of overlapping courses must agree on the extent of overlap and attach a rationale explaining its necessity.

Indicate all departments/courses that this course may overlap. Division Dean of existing course enters one of two options at right. Note: N/A is not an option.

Options:

1. Approved: overlap is acceptable. Rationale attached.
2. Disapproved: reasons attached.

Division	Course Number / Title	% Overlap	Option	Division Dean of existing course (Signature required for all options)	Date
Social Science	GIS 246	5			
Social Science	GIS 180	5			

**Section 7. Qualification to fulfill degree requirements** (complete all relevant forms, available at <http://www.lanecc.edu/currshed/drrcforms.htm>, and send to Mary Brau for the Degree Requirements Review Committee):

☐ Form(s) applying for the following degree requirement status have been attached. (Only check this box when forms have been completed and attached.)

**AAOT, ASOT-Bus, OTM:**

- ☒ Arts & Letters  
☒ Social Sciences  
☐ Science /Computer Science  
☐ Mathematics

**AAOT:**

- ☐ Cultural Literacy Option

**AAS, 1-year and 2-year certificates:**

- ☒ Human Relations

## Section 8. Library Impact Statement

Under accreditation standards, Library consultation is essential for new programs, new courses and for substantively revised courses when the revisions entail any change in library use.

### What assignments will require the use of library and information resources?

Students will access some data and resources on the library GIS resource page.

Each academic area has a Liaison Librarian (<http://www.lanecc.edu/library/services/liaison.htm>). Contact the designated librarian to discuss the library needs of your course. Please allow the librarian at least one week to assess library resources.

#### To be completed by Liaison Librarian:

☒ Library resources are adequate to support this proposal.

☐ Additional resources are needed but can be obtained from current funds.

☐ Significant additional Library funds/resources are required to support this proposal.

\_\_\_\_\_  
Liaison Librarian

\_\_\_\_\_  
Date

## Section 9. Divisional Approval (To be completed by Division Chair and Administrative Assistant)

### Human, Physical, and Financial Resources:

☐ Additional instructional costs (staff, materials, services or facilities) will be incurred to offer this course.

Source of funding:

☐ No additional instructional resources (staff, materials, services or facilities) are needed to offer this course.

Explain:

### Required Certifications:

☐ We have developed minimum course certification standards according to the COPPs procedure "Instructor Qualifications: Credit," to be filed with ASA upon course approval.

☐ We have completed faculty certification form(s) for faculty qualified to teach this course, to be filed with ASA and Human Resources upon course approval.

### Fees:

☐ We have completed fee rationale and fee request forms to be submitted to ASA upon course approval, in compliance with the COPPs procedure, "Fees: Special"

☐ No special fees will be required for this course.

### Divisional Recommendation:

☐ The Division Chair and Administrative Assistant have reviewed this course proposal and kept a copy for divisional files.

☐ Faculty review of this course was completed within the division on \_\_\_\_ (date).

☐ Pass

☐ Do Not Pass

\_\_\_\_\_  
Administrative Assistant/Coordinator

\_\_\_\_\_  
Date

\_\_\_\_\_  
Division Dean

\_\_\_\_\_  
Date

## Section 10. College Approval

\_\_\_\_\_  
Curriculum Committee Chair

\_\_\_\_\_  
Date

\_\_\_\_\_  
Executive Dean

\_\_\_\_\_  
Date

Curriculum Approval

Committee hearing:

\_\_\_\_\_  
Date

\_\_\_\_\_  
Vice President, Academic Affairs & Chief Academic Officer

\_\_\_\_\_  
Date