

Course Code: GIS 115

Course Title: Remote Sensing Applications

Department: Agricultural Technologies

Effective Date: Summer 2026

PCS Code: 1.2 - Occupational/Technical Instruction

CIP Code: 01.0201

Repeatability: 0

Credit Hours

Catalog Notation: 2-2-3

Credit Hour Distribution:

Lecture: 2

Lab: 2

Clinical: 0

Total: 3

General Course Information

Catalog Description

Introduction to the characteristics of various sensors, data collection and analysis applicable to remote sensing applications with traditional aerial platforms and civil unmanned aerial system (UAS) operations.

General Course Objectives

- Students will demonstrate a practical understanding of remote sensing systems, their respective capabilities, and their relationship to traditional aerial platforms and Unmanned Aerial Systems (UAS).
- Students will be able to use the tools related to the processing of remote sensing data to map and identify features in various land classifications.

Minimum Placement Levels

English	Reading	Math
Placement out of ENG 098	Placement out of CCS 099	Placement out of MAT 060

Prerequisites

None

Methods of Evaluation

The minimum number of evaluation methods include: 2 application projects, 5 quizzes, 5 lab exercises, and 1 final exam.

Instructional Materials and Additional Supplies

Remote Sensing and Image Interpretation, ESRI Press.

ArcGIS Software

Course Content

General Learning Outcomes (GLOs)

- **Critical Thinking and Information Literacy:** Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.
- **Reasoning and Inquiry:** Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- **Technology:** Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Introduction to Remote Sensing	1. Define remote sensing. 2. Identify instruments used in remote sensing. 3. Explain the use of energy in remote sensing. 4. Explain the characteristics of remote sensing systems. 5. Describe key elements in the history of aerial photography.	1	0	0
Electromagnetic Radiation	1. Discuss major divisions of the electromagnetic spectrum. 2. Discuss the interactions with atmosphere, surface, and radiation laws.	2	0	0
Introduction to Remote Sensors	1. Explain the basic principles of multispectral, thermal, and hyperspectral sensing and analysis. 2. Identify various remote sensors and how they work.	4	3	0
Traditional Aerial Platforms and UAS	1. Discuss the traditional platforms used for aerial acquisition. 2. Recognize the link to unmanned aerial systems.	6	4	0
UAS Standards, Regulations, and Law	1. Discuss legal considerations of UAS operations compared to traditional platforms. 2. Describe the current trends in UAS. 3. Summarize how the Federal Aviation Administration shapes and enforces aviation regulations, standards, and law.	3	8	0
Application of Remote Sensing	1. Explain the fundamental principles of vegetative remote sensing. 2. Describe the uses of remote sensing as it relates to agriculture and soils, forestry, geology, engineering applications, and various urban industries.	6	6	0
Digital Image Processing	1. Examine various methods of image processing.	3	5	0
Principles of Image Interpretation	1. Demonstrate supervised and unsupervised image classification. 2. Identify classification accuracy assessment.	2	4	0
Remote Sensing Data Applications	1. Implement uses of remote sensing technologies and products in agriculture and soils, forestry, geology, engineering applications, and various urban industries.	3	0	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0