

Department:

Precision Agriculture

Course Description:

This course examines fundamental concepts and theories from the geospatial, cartographic, and computing sciences to understand the emergence, use, and development of this rapidly growing area of geographic inquiry and research. Focused on GIS, Global Positioning System (GPS), and remote sensing as well as spatial data production, analysis, and management, this course combines an in-depth review of the major geospatial theoretical foundations with hands-on practical exercises to offer participants key opportunities to gain knowledge and expertise with which to collect, analyze, and produce geospatial and attribute information.

Course Competencies:

Upon completion of the course, the student should be able to:

1. Acquire a thorough understanding of mapping and geospatial technologies including Geographic Information Systems (GIS), Global Positioning Systems (GPS), and remote sensing.
2. Possess basic skills for map reading and map and data interpretation.
3. Understand cartographic principles for map compilation, design, reading, and production.
4. Utilize and apply map projections to incorporate geospatial data from a variety of different sources.
5. Develop and manage geodatabases and relational tables to collect, archive, and disseminate data.
6. Be able to analyze data needs and identify tools, methods, and procedures to produce information.
7. Understand basic principles of remote sensing to gather, assemble, and analyze imagery.
8. Produce maps and other data visualization aids using GIS and basic remote sensing technology.
9. Utilize Global Positioning System equipment as navigational tools and to collect field data.
10. Apply GIS and geodatabase development principles to collect, manage, and analyze information.
11. Follow standards and principles shared by practitioners and professional geospatial organizations.

Course Content:

- A. Principles of Cartography
- B. Location and Land Partitioning Systems
- C. Geospatial Data Management
- D. Data Sources and Compilation
- E. Tables, Text, and Data Types
- F. Geodatabase Design
- G. Geocoding
- H. Geodatabase Feature Behavior

- I. Vector GIS
- J. Raster GIS
- K. Map Design and Annotations
- L. Geoprocessing and Modeling

Learning Assessments:

Competencies may be evaluated by multiple measures, including discussion questions, graded assignments, comprehensive assignments, a research paper, projects, presentations, portfolios, quizzes, and exams.

Instructional Materials:

Textbook: Campbell, J., & Wynne, R. (2011). *Introduction to Remote Sensing* (5th ed.). New York, NY: The Guilford Press. ISBN-13: 978-1609181765

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).