

GEO/GIS 208

Introductory Mapping and Geographic Information Science

COURSE OUTLINE

Prerequisites:

Prerequisite: None

Course Description:

General Description:

Basic principles and methods of mapping and map use. Introduction to the field of geographic information science for the analysis and display of geographic data.

Specific Description:

This course provides the fundamental skills, background concepts, and software exposure to maps and geographic information Science (GISci). Basic concepts such as projections, coordinate systems, scale and direction are introduced and reinforced through exercises and lecture material. The course covers skills that will allow the student to critically examine maps and geographic approaches to find their weaknesses and strengths. Other topics receiving special emphasis will be questions on where to get spatial data, how to map spatial data, how to make digital maps, earth imaging and remote sensing, digital mapping techniques and an introduction to GISci. This course will give the student the necessary background for other digital cartography and GIS classes.

Semester Credits: 3 Lecture Hours: 3 Lab/Recitation Hours: Select Hours

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Course Outcomes

At the completion of this course, the student should be able to:

- Define and relate mapping and Geographic Information Science.
- Demonstrate an understanding of map reading, interpretation, and design principles.
- Describe the major concepts of map projection.
- Demonstrate an understanding of use of mapping software.
- Identify components required for GIS use.
- Explain how society uses geographic data and geographic information systems.

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Required Materials:

None

Textbook:

Map Use: Reading, Analysis, Interpretation, 7th edition, by A. Jon Kimerling, Aileen R. Buckley, Phillip C. Muehrcke, and Juliana O. Muehrcke. ESRI Press Academic, Redlands, California. 2012. ISBN: 978-1-58948-279-1

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Topical Description:

1. Introduction to maps
 - a. What is a map?
 - b. What is mapping?
 - c. What is GISci?
 - d. Common map elements
 - e. Some common maps
2. Map types
 - a. Real vs Virtual maps
 - b. Quantitative and Qualitative information in maps
3. Basic Mapping Components
 - a. Coordinate systems
 - b. Time zones
 - c. Contours
 - d. Mapping process
4. Scale and Generalization Concepts
 - a. Methods of expressing scale
 - b. Large and small scale
5. Terrain Representation
 - a. Topographic maps
 - b. Contours and slopes
6. Introduction to mapping software
 - a. ESRI – ArcView and other GIS software
 - b. Google maps
 - c. Other mapping software
7. Remote Sensing
 - a. Aerial photography
 - b. Satellite Imagery
 - c. Terrain representation
8. Map misuse
 - a. How maps have been used to confuse
 - b. Gerrymandering
 - c. Other issues with maps
9. Cartograms and Special-Purpose maps
 - a. Linear and area cartograms
 - b. Transportation maps
 - c. Weather and Climate maps
 - d. Geologic maps
10. Map Analysis
 - a. Topographic maps
 - i. Interpretation and understanding

- b. Thematic Statistical maps
 - c. GIS
- 11. Interpreting Spatial patterns
 - a. Quadrats
 - b. Nearest Neighbor
 - c. Chi-squares
- 12. Geographic Information Systems/Science
 - a. Overview of GIS
 - b. GIS components
 - c. Digital Spatial data
 - d. Data types
 - i. Vector
 - ii. Raster
 - e. Metadata
 - f. Applications of GIS
- 13. Future of GIScience

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Notes to Instructors

1. Departmental policy dictates that instructors do not allow students to keep tests.
2. A comprehensive final exam counting 15% - 20% of the total grade will be given at the end of the semester.
3. Syllabus should state what the course grade will be based on, such as tests, quizzes, a comprehensive final exam, and any other assignments made by the instructor.
4. The VWCC Geography Department uses a 10 point grading scale.
5. Comprehensive study of the listed topics is beyond the reasonable expectations of a 15-week Geography 208 course. It is up to the discretion of the instructor to choose which topics are more detailed but each topic should be adequately covered.