

OHLONE COLLEGE
Ohlone Community College District
OFFICIAL COURSE OUTLINE

I. Description of Course:

1. **Department/Course:** GEOG - 120

2. **Title:** Introduction to Global Positioning Systems(GPS).

3. **Cross Reference:**

4. **Units:** 1

Lec Hrs: 0.5

Lab Hrs: 1.5

Tot Hrs: 36.00

5. **Repeatability:** No

6. **Grade Options:** Grade Only (GR)

7. **Degree/Applicability:**

Credit, Degree Applicable, Not Transferable (D)

8. **General Education:**

9. **Field Trips:** May be Required

10. **Requisites:**

12. Catalog Description:

This course focuses primarily on the science and application of Global Positioning System (GPS) technology. Student receive hands-on experience with space-based radio navigation systems. The course will examine current and future GPS applications, explore basic navigation, illustrate map coordinate systems, and then integrate this knowledge with the GPS satellite navigation system.

13. Class Schedule Description:

This course focuses primarily on the science and application of Global Positioning System (GPS) technology.

14. Counselor Information:

This course focuses primarily on the science and application of Global Positioning System (GPS) technology.

II. Student Learning Outcomes

The student will:

1. Illustrate an understanding of GPS operation, types of GPS, and the use of GPS for spatial location of data.
2. Demonstrate a profound understanding of GPS related theories, geodetic systems, map projections, and GPS accuracy.
3. Categorize the common types of data collection equipment and approaches used in various environments.
4. Set up a simple GIS/GPS database and use GIS/GPS tools to process datasets.
5. Apply and evaluate the use of spatial analysis methods to data used in the course .

III. Course Outline:

I. Lecture Content:

- A. What is GPS?
- B. Pre-processing techniques
- C. Data field collection techniques
- D. GPS for GIS
- E. Map datums and GPS
- F. What is WAAS, Omnistar, and NavStar?
- G. Offsets, nested points, and line segmenting
- H. Basics of Satellite Orbits and Reference Systems
- I. What is the future for GPS?
- J. GPS Applications

II. Lab content:

- A. How GPS works
- B. Mission Planning
- C. Introduction to Pathfinder software
- D. Creating a data dictionary
- E. Differential Correction techniques
- F. Creating waypoints and navigating to features
- G. GPS unit accuracy
- H. Processing technique
- I. Introduction to map reading
- J. Introduction to cartography

IV. Course Assignments:

A. Reading Assignments

1. Readings assigned per textbook and other referenced material.

B. Projects, Activities, and other Assignments

1. Each student will be required to complete multiple exercises related to various GPS activities.

C. Writing Assignments

1. Each student will be required to write a paper or perform an oral presentation on a topic related to GPS applications.

V. Methods of Evaluation/Assessment:

- A. Utilize GPS to complete exercises and various activities.
- B. Complete a term paper or oral presentation on a topic related to GPS applications.

VI. Methods of Instruction:

- A. Lecture
- B. Laboratory
- C. Discussion
- D. Demonstration
- E. Audiovisual
- F. Computer Assisted Instruction

VII. Textbooks:

Recommended

1. El-Rabbany, A. *Introduction to GPS: The global positioning system*. Second Edition, Artech House Publishers, 2006 ISBN: 1-59693-016-0

Supplemental

VIII. Supplies:

- A. None.

CID 3342