

Lassen Community College Course Outline

FS-85 Understanding Maps, Compass & GPS

0.5 Unit

I. Catalog Description

Learn to navigate using topographic and other maps used with the compass and Global Positioning Systems (GPS). Discusses topography contours, map scales, and map projections. Navigate in the field using inexpensive modern compass and GPS receiver to define desired directions of travel and use them on the ground. Discussion of different hand-held GPS receivers, their usefulness, accuracy, and important features for use in the field. Students will learn how to use the GPS receiver and/or compass with map to determine accurate altitude information in land navigation and how to minimize navigation errors caused by the effects of weather and other natural interference. Material fee required and subject to change. There will be a \$5.00 student materials fee for student manual.

Diversity Statement

Our commitment to diversity requires that we strive to eliminate barriers to equity and that we act deliberately to create a safe and inclusive environment where individual and group differences are valued and leveraged for the growth and understanding as an educational community.

Recommended Preparation: Successful completion of ENGL105 or equivalent multiple measures placement.

Additional Course Information:

- Transfer Status: NT
- Total Number of Hours by Instructional Method: 8 hours Lecture, 10 hours Lab, 16 hours Outside study: 34 Total Student Learning Hours
- Scheduled: Spring

II. Coding Information

Repeatability: Not repeatable

Grading Option: Graded

Credit Type: Credit – Degree

Applicable TOP Code: 2133.10

III. Course Objectives

A. Course Student Learning Outcomes

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

1. Navigate, including calculating distance and direction, using the features of topographical and other maps in conjunction with compass and GPS.
2. Successfully set up and operate a GPS receiver for ground navigation.

B. Course Objectives

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

1. Demonstrate the ability to use topographic and other maps used with the compass and GPS.
2. Use GPS bearings to define desired directions of travel and use them on the ground.
3. Demonstrate the ability to determine accuracy, download GPS data, and other important features of GPS receivers.
4. Demonstrate the use of the GPS receiver with map and compass and how to minimize navigation errors.

IV. Course Content

A. Outline of Topics

1. Map Foundations
 - a. Introduction to Maps (Basic Types)
 1. General reference/road maps
 2. Topographic maps
 3. Navigational Maps
 - b. Map Projections
 1. Discuss Map Projections Concept
 2. Discuss Components of Projection Process
 - a) Investigate Distortion in Projections
 3. Visit a variety of Map Projections
 - c. Datum and Coordinate Systems
 1. Define a Datum
 2. Distinguish grid systems from spherical coordinate systems
 3. Define the Universal Transverse Mercator System (UTM)
 4. Define the State Plane Coordinate System (SPC)
 5. Show how coordinates can be determined using two systems
 - d. Public Land Survey System (PLS/PLSS)
 - e. Anatomy of a topographic map and practical field application
2. Compass Principles and Application
 - f. Describe the parts of a compass
 - g. Determine azimuth from a compass and map
 - h. Understand and adjust for magnetic declination
3. GPS use and applications
 - a. Use GPS bearings to define directions of travel and use them on the ground.
 - b. Download GPS data from GPS receivers.
 - c. Demonstrate the use of the GPS receiver with map and compass.
4. Field Skills
 - a. Compass use
 - b. Landform and feature interpretation with topographic maps; reading contours
 - c. Route-finding using GPS
 - d. Measuring distance and area
 - e. Establish pace count
5. Overview of other Mapping Technologies
 - a. Geographic Information Systems (GIS)

- b. Satellite imagery (e.g., Google Earth)

V. Assignments

- A. Appropriate Readings
 - 1. Readings other than textbook i.e. Journals, Manuals, Reference books, Websites
- B. Writing Assignments
 - 1. Students will compose a map from GPS readings.
- C. Expected Outside Assignments
 - 1. Practice with GPS unit. Students will be required to complete two hours of outside-of-class homework for each hour of lecture
- D. Specific Assignments that Demonstrate Critical Thinking
 - 1. Students will participate in a full day of field work as individuals and in teams to demonstrate their abilities in navigation using GPS in various terrain conditions.

VI. Methods of Evaluation

Traditional Evaluation

Term paper (topic choice, thesis statement, outline, bibliography, rough draft, final draft), homework, classroom discussion, essay, journals, lab demonstrations and activities, multiple choice quizzes, and participation. The student will be evaluated on class participation, written assignments and a final examination.

VII. Methods of Delivery

Check those delivery methods for which this course has been separately approved by the Curriculum/Academic Standards Committee.

- Traditional Classroom Delivery
- Correspondence Delivery
- Hybrid Delivery
- Online Delivery

Traditional Classroom Delivery

Lecture, discussion, audio/visual aids, demonstration, group exercises, guest speakers, lab, individualized programs and other as needed.

VIII. Representative Texts and Supplies

- A. National Wildfire Coordinating Group (NWCG) *Basic Land Navigation* PMS 475, NFES 002865 May 2016. Provided by Instructor.

IX. Course Status

- 1. Course Status: Active
- 2. Original Approval Date: March 16, 2010
- 3. Course Originator: Dan Weaver
- 4. Board Approval Date:
- 5. Chancellor's Office Approval Date:
- 6. Revised By: Dan Weaver
- 7. Curriculum/Academic Standards Committee Revision Date: 09/17/2024