

GEOG 9010: GPS for GIS

San Francisco State University, Spring 2019
Friday & Saturday, 8:30 AM – 5:30 PM (HSS 290)
Credit: 1.6 CEU

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Course Description:

This course provides students with an introduction to the basic components of Global Navigation Satellite Systems (GNSS) and the many applications of the discipline within the greater context of Geographic Information Systems. Exercises will provide students with exposure to the basic skills necessary for collecting, processing, and exporting data using different types of GNSS receivers. Students will also gain exposure to the techniques needed for collecting offset data points in the field using standard surveying equipment.

Learning Objectives for Course:

- Understand the difference between GPS, GLONASS, BeiDou & Galileo
- Learn how to collect data using different GNSS receivers.
- Learn how to process GNSS data in the Pathfinder Office software suite.
- Learn how to import GNSS data into a GIS project in ArcGIS Pro.
- Learn how to use differential corrections to collect more accurate data in the field.
- Learn how to construct and employ a data dictionary for GNSS data collection.

Prerequisites

Introduction to Geographic Information Systems (GEOG 9003) or equivalent.

Assignments

You will be asked to complete a total of six laboratory exercises. Exercises will take place both inside and outside of the classroom, so please plan / prepare accordingly.

Course Schedule

Friday May 10th

- 8:30 – 9:00 AM: Introductions and Orientation
- 9:00 – 10:00 AM: **Lecture 1 – Introduction to GNSS Concepts**
- 10:00 – 10:15 AM: Break
- 10:15 – 11:00 AM: Trimble Juno training & lab 1 introduction
- 11:00 – 12:00 PM: **Exercise 1 – Using Handheld GNSS for Data Collection**
- 12:00 – 1:00 PM: Lunch
- 1:00 – 2:00 PM: Exercise 1 data transfer & processing
- 2:00 – 2:30 PM: **Lecture 2 – GNSS Offsets and Surveying Techniques**

2:30 – 2:45 PM: Break

2:45 – 4:00 PM: **Exercise 2 – Calculating Offsets Using Surveying Tools**

4:00 – 5:00 PM: Lab 2 data transfer & processing

Saturday May 11th

8:30 – 9:15 AM: **Exercise 3 – Differential Corrections**

9:15 – 10:00 AM: **Lecture 3 – Coordinate Systems**

10:00 – 10:15 AM: Break

10:15 – 11:00 AM: R1 training and lab 4 introduction

11:00 – 12:00 PM: **Exercise 4 – Data Collection using a Trimble R1 Receiver**

12:00 – 1:00 PM: Lunch

1:00 – 1:30 PM: Lecture 4 – **GNSS Accuracy**

1:30 – 3:00 PM: Exercise 5 – **Creating and Using a Data Dictionary**

3:00 – 3:15 PM: Break

3:15 – 5:00 PM: Exercise 6 – **Final Project**