

Introduction to Global Positioning Systems (GEY 140)

Instructor: Jack Stanesco
e-mail: jack.stanesco@rrcc.edu

Topic Outline

1. What is a Global Positioning System (GPS)?
 - a) How a GPS works
 - b) History of GPS
2. Coordinate systems
 - a) Latitude/longitude grids
 - b) Universal Transverse Mercator (UTM) grid
3. Coordinating GPS data with a topographic map
 - a) Plotting coordinates on a map
 - b) Using UTM grid template to locate points
 - c) Establishing routes by entering map locations into a GPS receiver
4. Using a hand-held GPS receiver
 - a) Initializing the receiver
 - b) Taking a position fix
 - c) Entering waypoints
 - d) Navigation using a GPS
 - e) Backtracking
5. Mapping with a GPS on graph paper
6. Using Digitized Topographic Maps
 - a) Establishing waypoints in lat/lon and UTM coordinates
 - b) Plotting real-time locations by linking a GPS with a laptop
 - c) Uploading and downloading GPS data
 - d) Using the Tracking function in mapping
 - e) Sources of digitized maps
7. GPS and Google Earth (GE)
 - a) Navigating in Google Earth
 - b) Using GE to obtain coordinates
 - c) Creating Decimal-degree and UTM grids

(continued)

Anticipated Outcomes

By the end of the course the student should be able to:

Describe how a GPS locates a point on the earth's surface.

Locate points on a topographic map using latitude/longitude and UTM coordinates.

Enter lat/lon and UTM coordinates into a GPS receiver.

Switch between lat/lon and UTM position formats and NAD 27 and WGS 84 datum systems in a GPS receiver.

Use a GPS to take a position fix and mark a present position.

Use a GPS to go to a waypoint and track back to a starting point.

Plot UTM coordinates derived from a GPS on graph paper.

Access lat/lon and UTM coordinates on digitized Topo maps and Google Earth.

The student's final grade will be based on his/her ability to perform the above-mentioned skills.