**Curriculum Summary / Syllabus**

**Seattle Wilderness Navigation Course 2019**

**Four components**

1. **eLearning Workshop**
2. **GPS Online Module**
3. **In-Person Workshop**
4. **Field Trip**

**eLearning Online Workshop:**

The eLearning Workshop includes provides the foundational knowledge for navigation and introduces some practical skills. It also includes readings from the book - Wilderness Navigation 3rd Edition by Burns and Burns.

* Map Basics
	+ Identify Contours and Elevations, Topography, Features, Declination, Scales, Catch-line, Handrail,
* Compass basics
	+ Identify the parts and common errors. Understand bearings and then take a bearing from map. Plot a bearing on map. Aiming Off.
* Coordinate Systems
	+ Datums, Zones, UTM, Latitude/Longitude. Plot and Read a coordinate.
* Altimeters
	+ Types, Features, Uses, Cautions, Point Position w/Altimeter.
* GPS Basics – very brief introduction, power issues, need for backup.
* I’m Lost, Now What?
	+ Orient a map, plot bearings, determine altitude, slope angle, backtracking, heading to baseline, and staying put.
* Route Planning / Trip Planning
	+ Intro to trip reports, assessing conditions, impacts of distance, weather, fitness, time, Identify handrails & catchlines, create a basic trip plan.

**GPS Online Module**

The GPS Online Module provides more information on GPS systems and tools, and on other online tools that are useful in trip planning. It includes some practical exercises with Gaia GPS and other tools and prepares you for the In-Person Workshop.

* GPS System Basics - The system, satellites, common issues and errors,
* GPS Devices - types, features, applications.
	+ Practice - Set up Gaia GPS on your smartphone.
* GPS Features - Waypoint, Track, Route
	+ Practice - Record a track near home. Set a waypoint at home.
* PLB/Emergency Communications - Types and Features, How to use, Ethic of Self Reliance, Example of SAR response.
* Digital Workflow -
	+ Learn "At Home" activities to do before a trip.
	+ Practice with Caltopo, GaiaGPS, Smartphone Gaia, and GPX Files.
	+ Print a map around your home area. Download a map. Import a GPX.
	+ Learn "At Trailhead" activities – calibrate tools, set waypoint, discuss duties.
	+ Learn "En-Route" activities - introduce situational awareness, OODA Loop.
	+ Learn "After Trip" activities.

**As you finish both Online components, you will, "Prepare for the Workshop"**

* **Basic Trip Plan completed (Bring it to the workshop)**
* **Gaia GPS App Loaded on Device**
* **Recorded at least one track yourself**
* **Recorded at least one waypoint**
* **Device fully charged**
* **Download Magnuson Park GPX from Gaia folder**
* **Bring hardcopy map of Heybrook (USGS Index)**
* **Read a Swiss Alps Case Study**
* **Bring a headlamp**
* **Dress for the outdoors.**

**In-Person Workshop**

**The In-Person Workshop will be an opportunity to put knowledge into practice. There are four practical exercises to build upon what you learned in the Online components, and to prepare you for the Field Trip.**

* Practice with GPS and Compass.
	1. Download a GPX containing a map, track, and waypoints.
	2. Go outside and practice with GPS and Compass together.
		+ Follow a track.
		+ Navigate to a waypoint.
		+ Get bearing from GPS and then use compass to navigate.
		+ Take several compass bearings.
* Map vs Actual
	1. Compare map to photos.
	2. Visualize topography
* Tabletop Exercises – scenario based
	1. At Home, At Trailhead, En-Route components of trip planning
	2. Use a combination of tools to determine position, bearings, distance, terrain, features, slope, etc...
* Prepare for Field Trip
	1. Download GPX Folder.
	2. Review trip plan you prepared in eLearning

**As you leave the workshop, you should be prepared for the field trip with the following:**

* **Know where and when to be at the field trip, and what to bring.**
* **Hard copy map of field trip area on hand.  USGS is best, with Caltopo or Gaia paper map printed as backup or to provide to other hikers.**
* **Current declination set on the compass and confirmed.**
* **Altimeter use & limitations are understood. Ready to calibrate at trailhead.**
* **GPS device loaded with Route/Track, Waypoints, Map.**
* **Emergency communications procedures and devices are understood.**
* **GPS device checked and ready ( batteries, charge, screen display, weather proofing...)**
* **Emergency communications on hand (minimum whistle)**

**Field Trip**

The field trip is set of practical exercises that combines all knowledge and skills learned up to this point with all four tools that you are required to have -- Map, Altimeter, Compass, and GPS. It is based on a series of scenarios throughout the day. Also see the Field Trip Student Packet for more information on the field trip:

Scenario 1 (Muster area to actual trailhead) – “At the Trailhead” activities

* Trip Briefing
* Double check Maps, Compass, GPS, Altimeter
* Identify handrail, catchline. and estimate travel time.

Scenario 2 (Trailhead to Tower)

* Initial practice with the tools.
* Identify point positions, terrain, contours, slope, features.
* Take bearings with compass

Scenario 3 & 4 (Tower to Stump Fields)

* Review Ten Essentials
* Check travel times, device power.
* Take more bearings with compass.
* Prepare for the route ahead.

**End result of Scenarios 1 to 4 – confidence with the tools, particularly the compass. Able to determine point position in various ways.**

Scenario 5 (East Stumps to Lunch Area)

- Follow a bearing on a short exercise using various techniques.

Scenario 6 (Lunch Problems)

* Identify your lunch spot by using a sequence of techniques – terrain association, dead reckoning, altitude, slope, bearings to distant objects, GPS & UTM.

**End Result of Scenarios 5 and 6 - comfortable with use of GPS and map together for determining point position and comfortable following a bearing with a compass through varied terran.**

Scenario 7 (Lunch to Final Problem Briefing)

- Navigate to a GPS waypoint. Estimate elevation gain, distance, time.

- Identify waypoint positions on the paper map.

Scenario 8 (Briefing Area to Launch Point "A") - More waypoints, routes, tracks.

* Use GPS and terrain association to navigate to the top of the Heybrook Ridge.
* Use altimeter to determine proximity to objective.

Scenario 9 (Launch "A" or other, to old forest road, then active forest road)

- Use GPS to navigate to a waypoint about halfway down the slope (the old road).

- Use compass to navigate the remaining distance to the main catch line (the active road).

- Compare how each tool aided or hindered your navigation.

**End Result of Scenarios 7 to 9 - Able to use GPS to navigate to a waypoint in varied conditions. Comfort using GPS and Compass together. Understands when each tool may be most useful.**

Scenario 10 (At Final Problem Catch Line)

* Create a pace count, find a stash, role play emergency communications

Scenario 11 (Catchline to Check Out Station)

* You aren’t out of the wilderness until you are out of the wilderness. Key considerations for the trip down the mountain – observations, features, handrails and catchlines, altitude, signs, etc…

**End Result - Able to use all four navigation tools in varied terrain and circumstances.**