

On-Trail Navigation Minimum Clubwide Standards

OVERVIEW

Application

This standard applies to The Mountaineers-recognized On-Trail Navigation Badge. In 2021, On-Trail Navigation was updated from Staying Found to On-Trail Navigation.

Target Audience

Any Mountaineers member who wishes to understand the basics of on-trail navigation using information from a map and observations in the field combined with a compass, watch, altimeter and GPS. Mountaineers who have earned the badge will be well-prepared to confidently follow even remote backcountry trails.

Definition

On-Trail Navigation refers to navigation performed on trail and includes navigating in an emergency or in poor conditions.

Participants

There is no prerequisite for earning the badge.

Students attending a Field Trip must be in reasonable physical condition and capable of traveling on trails. Students must appear for Field Trips with appropriate clothing and equipment.

Instructors

Instructor qualifications are:

- Active Mountaineer membership
- Possesses an active On-Trail Navigation Badge, Basic Navigation Badge, Wilderness Navigation Badge, or permission of the Navigation Committee Chair or Sponsoring Committee.

The Instructor-to-Student ratio for the Workshop or Field Trip should be considered such that adequate instruction, guidance, support, and safety are incorporated into the program.

Courses

Mountaineers Branch Committees may offer courses that award the On-Trail Navigation Badge. On-Trail Navigation Badges awarded by any Mountaineers Branch Committees shall be accepted by any Mountaineers branch or activity. Certification is valid for three years and may be renewed by retaking the course or instructing at an On-Trail Navigation Course.

Mountaineers members who have earned the On-Trail Navigation.Badge have demonstrated that they are able to:

1. Recognize major landscape features on a topographic map, read and interpret the scale and legend, and use the map for basic planning and on-trail navigation applications.
 - a. Interpret major map features using the map's legend and understand how to use them as "handrails" to check their location along a trail.
 - b. Use the map's scale and trail distance information.
 - c. Understand how to read the contour lines on a map to determine elevation and important terrain information.
 - d. Understand how to orient a map to north using only landmarks and use that with observed information on the map and on the ground to determine their location and which trail to take. without having to use a compass.

2. Use a compass with a topo map to make navigation decisions on the trail including measuring and following a bearing.
 - a. Know the five tools of navigation and the basic function of each:
 - i. physical map
 - ii. altimeter
 - iii. compass
 - iv. Satellite communication device
 - v. digital map on a GPS device.

*A timekeeping device such as a watch or phone is as relevant but not set as the *five tools of navigation*
 - b. Understand the concept of Situational Awareness and its relationship to staying found and staying safe.
 - c. Understand the parts of a compass and their basic functions.
 - d. Determine a compass bearing in the field and on the map.
 - e. Apply a compass bearing with the map to decide which trail is the one to take at a junction in the absence of a reliable sign or if the trail is obscured.
 - f. Determine the bearing of a trail from the map and compare it to the bearing of a trail, or at a junction of several trails, to determine if they are on the right trail or, at a junction, to determine which trail to take.

3. Use time, observed terrain, the built environment, and altimeter with a topographic map to maintain awareness of current location on a trail and how long a given route should take.
 - a. Use elapsed time and distance to estimate speed of travel.
 - b. Calculate approximately how long it should take to cover a specified section of trail using distance and estimated speed of travel.
 - c. Use elevation information from an altimeter and contours on the map to determine location on the trail.

4. Use a dedicated GPS device or phone app to find their location on the trail.
 - a. Understand the benefits and limitations of using electronic navigation as well as the benefits and limitations of using a physical map and compass.
 - b. Be able to download a digital map to a dedicated GPS device or phone app.
 - c. Be able to use the digital map in the field to verify location.

5. Use a dedicated GPS device, computer, or phone app to plan an on-trail route.
 - a. Consult existing trail reports, guides or other sources of information about the desired route.
 - b. Plot and save a digital route and use the information (distance, elevation gain/loss, and other details) to describe anticipated features and challenges.
 - c. Obtain a “GPS bearing” (bearing and distance) to a waypoint from the GPS device and be able, using a compass, to point in the direction of the waypoint and note the distance.

Certification

Certification in any branch's On-Trail Navigation Course shall be accepted by any Mountaineers branch or activity that is primarily focused on on-trail travel. For this reason, adoption of common standards across branches is appropriate. Certification is valid for three years and may be renewed by one of the following:

- Retaking the course
- Instructing On-Trail Navigation

Safety Considerations

Each branch should consider their own safety protocols for their field trips, and incorporate these safety items as necessary. At least one of The Mountaineers leader or instructor must carry a communication device (Personal Locator Beacon, Satellite Messenger, Cell Phone) for contacting emergency responders. These are recommended, based on past experience.

- Use of whistles in case of needed immediate attention – lost navigator (panic)
- Use of two way radios for instructors manning the start/stop and boundary lines
- Flagging to identify out of bounds areas (handrails)
- Communication devices for contacting emergency responders (Personal Locator Beacon, Satellite Messenger, Cell Phone)
- Field trip leader or instructor as a designated safety manager
- At least one instructor with wilderness first aid certification

ADDENDUM

SAMPLE COURSE STRUCTURE

Following is the structure used by the Foothills Branch in 2022. Any branch is welcome to use this structure or to modify the structure to meet its needs.

Course Structure

Foothills On-Trail Navigation is taught in two phases: a live workshop (either in person or online) to teach the required skills, and an outdoor field trip to practice those skills.

Workshop

The workshop is a 1.5-2-hour online class that teaches the concepts outlined in the Course Objectives listed above. Students receive homework to practice the skills and help them prepare for the Field Trip, which occurs 1-2 weeks after the class.

Field Trips

The Foothills Field Day includes 5 “parking lot” exercises for students to practice the skills, plus a route each group will follow. Leaders receive instructions for their route and questions to ask along the way. Ideally, at least two instructors will be present for each Field Trip group.

Instructors must have completed either the On-trail Navigation course and hold an active On-trail Navigation badge or the Off-trail Navigation course, also known as Wilderness Navigation, and hold an active Basic Navigation badge. At least one person (leader or instructor) must have current Wilderness First Aid certification or similar first aid or medical training. Students and instructors attending a Field Trip must be in reasonable physical condition and capable of traveling the required distance and elevation.

The following safety items are recommended:

- Whistles (students and instructors)
- Communication devices for contacting emergency responders, such as Personal Locator Beacon, Satellite Communicator, Cell Phone (instructors)
- Ten Essentials, including a first-aid kit and appropriate gear/clothing for hiking in the expected weather conditions

During the Field Trip, students practice the following skills:

- Demonstrate situational awareness by answering the following 5 questions:
 - 1) Where are you?
 - 2) Where are you going?
 - 3) What route will you take to get there?
 - 4) How long will it take?
 - 5) What do you expect to see along the way?
- Orient the map to north and read map features, such as contour lines, distance, and elevation.
- Understand different map scales.
- Measure bearings on several stationary targets.
- While measuring and following bearings, demonstrate proper techniques for boxing the needle, using the direction of travel arrow, turning the whole body, and sighting appropriately for the type of compass (mirrored or un-mirrored).

- Follow a bearing individually and as part of a team using leap-frog and back-bearing techniques.
- Obtain a “GPS bearing” (bearing and distance) to a waypoint from the GPS device and be able, using a compass, to point in the direction of the waypoint and note the distance.
- Estimate pace and hiking time for a given distance and elevation.
- Find your location on a map using elapsed time, altimeter, and observed terrain.
- Use Gaia or another GPS device or smartphone app to verify your location.

Required Equipment

	Workshop	Field Trip
Compass with adjustable declination and, ideally, a mirror*	X	X
Physical map	X	X
The Mountaineers Ten Essentials, including appropriate clothing for an outdoor field trip		X
Altimeter or Altimeter App on a device		X
Dedicated GPS device or GPS smartphone app		X
Timekeeping device (phone, watch)		X
Any other materials the course requires	X	X

** Although a mirror is not required, it will benefit students to purchase a compass with this feature if they plan to continue on to Wilderness Navigation.*

Optional Practice Hike

Two or three weeks after the course has been completed, students have the option to participate in a hike with one or more On-trail Navigation leaders to reinforce their navigation skills. This hike follows the same pattern as the Field Day Hike, but is typically at a slower pace with more time for individual instruction. It is particularly useful for students who need more practice.

Course Requirement

To graduate, students must complete the online Low Impact Recreational Skills course.

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