

## ***SKI PATROLLER'S MANUAL***

***PROPOSED NEW TEXT (SEE PAGE 12 FOR ORIGINAL TEXT)***

### **Mountain Travel & Rescue**

According to *Accidents in North American Climbing 2016*, in 1951 there were 15 reported accidents and three fatalities related to mountain travel in the U.S. In 2015, the number of reported mountaineering accidents was 173, with 37 fatalities. As more people hike, climb, ski, snowboard, and bike in the mountains, these numbers will almost certainly increase. As a consequence, ski patrollers, often first on scene in mountain and outdoor-related rescues, will face increasing needs for mountain travel and rescue skills beyond those covered in Outdoor Emergency Care. Alpine and Nordic patrollers alike will work in harsh environmental conditions, facing challenges that require survival, navigation, hazard management, and rescue expertise for rugged terrain, remote backcountry settings, and winter weather. NSP's Mountain Travel and Rescue (MTR) program addresses these needs.

#### **Mission**

The MTR program provides ski patrollers and interested members of the public with knowledge and skills that (1) enhance their effectiveness at ski patrolling, (2) build their outdoor leadership capacities, and (3) enable them to serve as assets and leaders in search-and-rescue (SAR) operations, especially in winter settings and mountain environments.

#### **Program philosophy**

The program adds value to the NSP by training ski patrollers to serve as highly skilled, safety-conscious leaders of outdoor activities in the mountains, within and beyond resort boundaries. MTR courses provide a broad, balanced array of outdoor skills related to survival, navigation, backcountry travel, group dynamics and decision making, terrain management, environmental awareness, search and rescue, and emergency care.

MTR training:

- serves the needs of area and land-use managers who require resources possessing side-country and backcountry search-and-rescue (SAR) skills, especially in winter environments;
- trains students in skills needed for other NSP educational programs, especially the Nordic, Avalanche, and Outdoor Emergency Transportation programs;

- provides education in mountain travel and rescue skills commonly required by non-NSP SAR organizations and sought by guides and outdoor enthusiasts;
- prepares students to travel and work safely and in reasonable comfort in the outdoor winter environment.

MTR courses involve classroom and field sessions. They include hands-on training and skill demonstrations to ensure that students can apply what they have learned to real situations. Whether you are an outdoor enthusiast seeking to expand your survival, travel, and rescue skills in the backcountry environment, a member of an organized search-and-rescue team, or a ski-area patroller preparing for in-bounds search-and-rescue operations, MTR courses provide critical outdoor skills.

### **Program structure**

NSP offers several levels of MTR education. The table below summarizes the five MTR courses currently available and provides an overview of their contents.

<b>Course Title</b>	<b>Minimum Time Requirements</b>	<b>Target Audience</b>	<b>Summary Description</b>
MTR Fundamentals (MTR F)	12 classroom hours 1 8-hour field session	Ski patrollers and members of the public who seek awareness of and proficiency in skills needed to be assets in search-and-rescue (SAR) operations, especially those conducted in the winter or in mountainous terrain. <i>People who plan to take MTR 2 should complete MTR 1 instead of MTR F.</i>	This course covers basic techniques of wilderness navigation, mountain travel, and survival, including emergency shelters, the Incident Command System, group dynamics, and SAR. <i>MTR F does not include an overnight campout. Students must complete two National Incident Management System courses in the Incident Command System: IS-100.b and IS-700.a.<sup>1</sup></i>
MTR 1	12 classroom hours 1 8-hour field session 1 overnight camp	Ski patrollers and members of the public who seek awareness of and proficiency in skills needed to be assets in search-and-rescue (SAR)	This course provides hands-on practice in wilderness navigation, mountain travel, and survival, including emergency shelters, the

---

<sup>1</sup>Materials, tests, and certification instructions are retrievable at the following URL:  
<http://training.fema.gov/IS/NIMS.aspx>.

		operations, especially those conducted in the winter or in mountainous terrain and in settings involving possible overnight outings. <i>MTR F is not a prerequisite.</i>	Incident Command System, and SAR. <i>MTR 1 includes a mandatory overnight field session. Students must also complete two National Incident Management System courses in the Incident Command System: IS-100.b and IS-700.a.</i>
MTR 2	16 classroom hours 2 8-hour field sessions 1 2-night camp	Ski patrollers and members of the public who have completed MTR 1 and who seek to demonstrate proficiency in MTR skills at a level appropriate for team leaders in mountain and winter SAR operations. <i>Completion of MTR 1 is a prerequisite, since MTR 2 requires overnight exercises. Students for MTR 2 also must have completed module 1 (classroom component) of NSP's level-1 avalanche curriculum or equivalent training from a provider recognized by the American Avalanche Association. Students must also complete the National Incident Management System course IS-200.b, in addition to the courses IS-100.b and IS-700.a completed as part of MTR 1.</i>	This course involves classroom work and at least two field days in addition to a two-night field session. The course includes in-depth practice in land navigation, search and rescue, rescue rigging, survival skills, and emergency shelters. To pass MTR 2, students must demonstrate independent proficiency in a well defined set of backcountry travel, land navigation, emergency shelter, and rescue rigging skills. These skills align with many standards listed in ASTM F2209-14, "Standard Guide for Training of Land Search Team Member."
MTR Clinic (MTR C)	Flexible	Ski patrollers and members of the public who seek additional expertise in specific MTR	MTR Clinics allow focused, in-depth training in one or two specific topics, based on

		skills, at a level typically involving six hours or more, up to two field days. There are no prerequisites other than proper clothing and equipment and ability to participate in the planned activities.	patrollers' local needs. Examples include search and rescue techniques, land navigation, rope rescue, survival skills, and extended backcountry patient care.
MTR Enhancement Seminar (MTR E)	Flexible	Ski patrollers and members of the public who seek additional expertise in specific MTR skills, at a level typically involving six hours or more, up to two field days. MTR E normally requires completion of MTR F, MTR 1, or MTR 2. <i>Instructors of record may establish prerequisites for participation based on the level of material being presented.</i>	Similar to MTR Clinics, MTR Enhancement Seminars allow focused, in-depth training in one or two specific topics, based on patrollers' local needs. MTR E assumes a prior level of knowledge consistent with completion of a full-length MTR course.

## **Core topics**

The MTR curriculum covers 16 core topics:

### Part 1 Survival

- Topic 1: Body Temperature Regulation
- Topic 2: Water and Hydration
- Topic 3: Nutrition
- Topic 4: Clothing
- Topic 5: Sleeping Systems
- Topic 6: Emergency Shelters
- Topic 7: Essential and Group Equipment

### Part 2 Travel

- Topic 8: Travel Equipment
- Topic 9: Navigation
- Topic 10: Backcountry Hazards

### Part 3 Backcountry Considerations

- Topic 11: Environmental Awareness and Camping

- Topic 12: Weather
- Topic 13: Group Dynamics
- Topic 14: Backcountry Medical Emergencies

Part 4 Search and Rescue

- Topic 15: Search and Rescue Basics
- Topic 16: Emergency Rescue Techniques

The differences between MTR F, MTR 1, and MTR 2 lie (1) in the level of depth in which the courses treat these core topics and (2) in the degree to which students must demonstrate the skills. To pass MTR 2, each student must complete a skills checklist, demonstrating the required skills independently and without coaching.

**Terrain guidelines**

The table below, summarizing information in Chapter 16 of *Mountain Travel and Rescue* (2<sup>nd</sup> edition) defines different types of terrain according to the average slope angle of the Earth’s surface.

<b>Terrain Type</b>	<b>Slope Angle</b>
Flat	0° - 15°
Low Angle	15° - 30°
Steep Angle	30° - 60°
High Angle	≥ 60°

Because of the possible presence of crevasses and moulins, the MTR program classifies glaciers as high-angle terrain.

Consistent with Appendix I of NSP Policies and Procedures, “[t]he MTR program does not provide instruction in high-angle technical rescue on snow, ice, or rock. Patrollers requiring training beyond the scope of the MTR Program should do so through courses from agencies specializing in such training.”

All instruction in NSP MTR courses—even in skills that may also be useful in high-angle terrain—takes place on flat, low-angle, or steep-angle terrain. NSP recognizes that some patrollers working at some areas may need training in high-angle terrain. Patrollers who need or want training of this type should seek it through other providers. Indeed, patrollers trained in these techniques can be genuine assets in certain mountain rescue operations. NSP strongly recommends that patrollers who seek this level of training do so through providers accredited by the American Mountain Guides Association or registered with the Mountain Rescue Association.

The MTR program defines avalanche terrain as any terrain within one kilometer of snow-covered slopes steeper than 25 degrees. To conduct field sessions in avalanche terrain, MTR instructors must have completed NSP’s Level 2 Avalanche course, and all instructors and students must carry avalanche transceivers, probe poles, and shovels. At their discretion,

division MTR supervisors may require students to complete some or all of NSP's Level 1 Avalanche curriculum before participating in MTR field sessions conducted in their divisions in avalanche terrain.

## **Mountain Travel & Rescue Fundamentals (MTR-F)**

The target audience for Mountain Travel and Rescue Fundamentals is ski patrollers and members of the public who seek awareness of and beginning proficiency in skills needed to be assets in search-and-rescue (SAR) operations, especially those conducted in the winter or in mountainous terrain.

The course does not assume any prior knowledge of mountain travel skills or SAR techniques. Students acquire the skills and knowledge needed (1) to travel safely and comfortably in cold, rugged, backcountry terrain; (2) to read topographic maps and execute simple backcountry navigation using terrain association and a compass; (3) to construct an emergency shelter and manage common mountaineering medical problems; (4) to understand fundamental SAR terminology and methodologies and the Incident Command System; and (5) to be aware of rescue techniques appropriate for flat, low-angle, and steep-angle terrain.

### **Prerequisites**

There are no formal prerequisites aside from the capacity to participate in all classroom and field sessions and willingness to sign a liability waiver. Before successfully completing MTR 1, each student must complete the following National Incident Management System courses, available free and online:

- IS-100.b (Introduction to the Incident Command System)
- IS-700.a (National Incident Management System (NIMS) An Introduction).

### **Time commitment**

- Adequate classroom preparation training prior to the field sessions. Most MTR F courses require at least 12 hours of classroom instruction in addition to field instruction.
- At least one eight-hour field day. In addition to imparting skills, the field day helps ensure that students demonstrate their abilities to function comfortably in a single-day search-and-rescue event. Two field days may be necessary to cover all of the required material.

### **Fees**

National: none  
Division: varies  
Local: varies; local fees should cover any required expenses and permit fees.

### **Credential**

## NSP Certificate of Achievement

### **Continuing education or refresher requirement**

NSP recommends participating in an MTR field session or MTR Enhancement Clinic at least every three years.

### **Mountain Travel & Rescue 1 (MTR 1)**

Mountain Travel and Rescue 1 provides students with the knowledge and skills to participate as strike team and task force members in search and rescue operations in mountainous terrain and winter conditions. MTR 1 requires an overnight field session to verify that students have the skills and knowledge needed for overnight operations. MTR 1 emphasizes awareness of skills and ability to execute them in the presence of and possibly with guidance from an instructor.

MTR 1 requires classroom and field sessions focusing on navigation skills, patient care, and search and rescue situations. The medical topics covered in MTR 1 can serve as a review for ski patrollers who have completed NSP's Outdoor Emergency Care course or as an introduction for students who do not have comparable emergency care training. But MTR 1 alone does not suffice to meet the emergency medical care requirements for most search-and-rescue groups.

### **Prerequisites**

There are no formal prerequisites aside from the capacity to participate in all classroom and field sessions and willingness to sign a liability waiver. Before successfully completing MTR 1, each student must complete the following National Incident Management System courses, available free and online:

- IS-100.b (Introduction to the Incident Command System)
- IS-700.a (National Incident Management System (NIMS) An Introduction).

### **Time commitment**

- Adequate classroom preparation training prior to the field sessions. Most MTR 1 courses require at least 12 hours of classroom instruction in addition to field instruction.
- At least one overnight field session, normally preceded by a separate, one-day field session to ensure that (1) students are well prepared for the overnight trip and (2) they demonstrate their abilities to function comfortably in an extended search-and-rescue event. Overnight camping must be either in tents or in improvised shelters.

### **Fees**

National: none  
Division: varies  
Local: varies; local fees should cover any course expenses and required permit fees.

## **Credential**

NSP Certificate of Achievement.

## **Continuing education or refresher requirement**

NSP recommends participating in an MTR field session or MTR Enhancement Clinic at least every three years.

## **Mountain Travel & Rescue 2 (MTR 2)**

Mountain Travel and Rescue 2 provides students with the knowledge and skills to serve as team leaders in search and rescue operations in mountainous terrain and in winter conditions. At this level, instructors expect students to execute and apply key skills competently and independently, without coaching. By the conclusion of the course, students will be able to serve as strike team leaders or task force leaders in search and rescue operations that may extend over several days.

MTR 2 requires classroom and field sessions focusing on advanced navigation skills, patient care, and advanced search and rescue situations. The skills and knowledge acquired in this course, together with those acquired in NSP's Outdoor Emergency Care and special training provided by the appropriate agency having jurisdiction, should enable ski patrollers to meet the standards listed in the ASTM International Standard F 2209-14, "Standard Guide for Training of Land Search Team Member."<sup>2</sup> The medical topics covered in MTR 2 can serve as a review for ski patrollers who have completed NSP's Outdoor Emergency Care course or as an introduction for students who do not have comparable emergency care training. But MTR 2 alone does not suffice to meet the emergency medical care requirements for most search-and-rescue groups.

MTR 2 includes a skills checklist and a written exam covering the skills and knowledge that each student must demonstrate to pass the course.

## **Prerequisites**

Each student must complete the following before registering for MTR 2:

- **NSP Mountain Travel and Rescue 1.** Students must have overnight camping experience before enrolling in MTR 2.
- **Module 1 (classroom component) of the NSP Level 1 Avalanche course or an equivalent avalanche course from an approved agency, as determined by the division MTR supervisor. Preparation for SAR operations in terrain requiring decisions about avalanche hazards requires completion of modules 1, 2, and 3 of the NSP Level 1**

---

<sup>2</sup> ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. Electronic document is available at <http://www.astm.org/Standards/F2209.htm>. NSP is not an agency having jurisdiction over SAR activities and does not provide training in crime-scene management, local radio calls, basic aviation safety, and other topics more appropriately associated with agencies having jurisdiction.



Avalanche course, and preparation for service as a strike-team or task-force leader in terrain of this nature requires completion of the NSP Level 2 Avalanche course.

- **Three National Incident Management System courses**, available free and online:
  - IS-100.b (Introduction to Incident Command System)
  - IS-200.b (ICS for Single Resources and Initial Action Incidents)
  - IS-700.a (National Incident Management System (NIMS) An Introduction).

In addition, each student must sign a liability waiver before participating in field sessions.

### **Time commitment**

- Adequate classroom preparation training prior to the field sessions. Most MTR 2 courses require at least 16 hours of classroom instruction in addition to field instruction.
- At least two eight-hour field days in addition to two consecutive nights of camping, either in tents or in improvised shelters. Ideally, the two field days serve as preparation for a two-night overnight trip.

### **Fees**

National: none  
Division: varies  
Local: varies; local fees should cover any expenses and required permit fees.

### **Credential**

NSP Certificate of Achievement

### **Continuing education or refresher requirement**

NSP recommends participating in an MTR field session or MTR Enhancement Clinic at least every three years.

## **Mountain Travel & Rescue Clinic (MTR C)**

MTR Clinics allow focused, in-depth training in one or more specific MTR-related topics, based on patrollers' local needs. A list below provides some of the many possible examples.

MTR Clinics have several possible target audiences, including ski patrollers and members of the public who seek additional expertise in specific MTR skills, at a level typically involving six or more hours up to two field days. MTR Clinics have no prerequisites other than the requirement that participants be appropriately clothed and equipped, physically capable of participating in the required activities, and willing to sign a liability waiver. The clinics provide a potentially useful tool for:

- Introducing MTR-related knowledge and skills to ski patrollers who have not completed MTR F, MTR 1, or MTR 2, as a way to recruit ski patrollers for more in-depth courses or as a way to improve their preparation for in-area search-and-rescue operations;
- Introducing NSP’s MTR curriculum to non-ski patrollers who may possess some MTR-related skills, as a way to recruit new ski patrollers or to introduce MTR instructors and other MTR courses to local search-and-rescue groups or cooperating agencies.

The following list—far from exhaustive—includes just some of the many possible topics that may be suitable focus areas for MTR Clinics:

1. Emergency shelters addressing regional climate conditions and natural materials.
2. Leave-no-trace awareness and training.
3. Snow cave construction.
4. Emergency fire starting techniques.
5. Wilderness water treatment techniques.
6. Snow- and mixed-travel skills for spring, summer, and fall conditions in alpine terrain.
7. Navigation coordinate systems, including latitude and longitude, UTM coordinates, and the US National Grid System.
8. Off-trail navigation techniques.
9. Mountain weather and the geophysical forces that drive it.
10. Intermediate or Advanced Incident Command System.
11. Search theory and methodology.
12. Lost person behavior.
13. Working with search-and-rescue dogs.
14. Rescue litter assembly and management.
15. Rescue rigging for raising and lowering systems.
16. Snow and terrain anchors.
17. Crime scene awareness for search-and-rescue operations.
18. Radio communications in mountainous terrain.
19. Personal locator beacons and RECCO-aided searching.
20. Safe lowering and rappelling practices.
21. Prevention and remote emergency care of altitude illness.
22. Prevention and remote emergency care of hypothermia and frostbite.
23. Extended medical care for wilderness and mountaineering patients.
24. Protocols for helicopter operations.
25. A competition or exposition in which teams demonstrate a variety of MTR-related knowledge and skills, under the supervision of MTR instructors and ITs.

### **Mountain Travel & Rescue Enhancement Seminar (MTR E)**

MTR Enhancement Seminars allow focused in-depth training in one or more specific MTR-related topics, based on patrollers' local needs. The list in the previous section provides some of the many possible examples.

The target audience for MTR Enhancement Seminars includes ski patrollers and members of the public who seek additional expertise in specific MTR skills, at a level typically involving (1) at least six hours, up to two field days and (2) knowledge and skills gained through previous completion of MTR F, MTR 1, or MTR 2. MTR Enhancement Seminars have no additional prerequisites other than the requirement that participants be appropriately clothed and equipped, physically capable of participating in the required activities, and willing to sign a liability waiver.

## **Texts**

***Mountain Travel and Rescue***, 2<sup>nd</sup> edition, The Mountaineers Books, 2012.

This required text for MTR F, MTR 1, and MTR 2 equips students with the knowledge to enjoy, travel, and survive in the outdoor environment and assist as members of search and rescue and rope rescue teams. The book covers all 16 core topics of the MTR curriculum and contains additional useful information.

***Mountain Travel and Rescue Instructor's Manual***.

This manual serves as the guideline for all MTR courses and is a must for all MTR instructors. It includes program descriptions, lesson guides, instructor information, and course activities. This manual changes as the program's needs dictate; the most current version is available to all NSP members in electronic (.pdf) format on the NSP website, in the member resources section under educational resources and instructor resources.

ORIGINAL TEXT FOLLOWS

## Mountain Travel & Rescue

In 1951, there were 15 reported accidents and three fatalities related to mountain travel in the U.S. In 2009, the number of reported mountaineering-related accidents was 126, with 23 fatalities, according to *Accidents in North American Mountaineering 2010*. With the rise in the number of people participating in outdoor activities such as skiing, climbing, mountain biking, and hiking, outdoor accidents and fatalities will also rise, based on statistics.

Ski patrollers are at the epicenter of mountain and outdoor related rescues. Alpine and Nordic patrollers alike work in varying environmental conditions and stresses that require additional survival and rescue training that are typically not available to urban rescue organizations and agencies. Attendees taking Mountain Travel & Rescue (MTR) courses will learn a variety of skills, including nutrition and how the body performs in a wilderness environment, weather patterns, survival skills, working with group dynamics, an introduction to search and rescue, rope rescue skills, improvised toboggan construction, and land navigation with map, compass, and GPS. The MTR courses are taught in classroom and field sessions, including mock scenarios to ensure the attendees can apply what they have learned to real life situations.

Whether you are an outdoor enthusiast looking to expand your survival and travel skills in the backcountry environment or a ski patroller preparing for one of the worst possible scenarios a parent can face at a ski area (a lost child), the MTR courses prepare students for non-urban and mountain related survival and rescue skills.

### **Mountain Travel & Rescue Fundamentals (MTR-F)**

This course provides participants with the basic knowledge and skills to travel and work in reasonable comfort and safety in the mountains and to provide supervised assistance in search and rescue operations. The course is taught primarily in a classroom environment with opportunities to demonstrate proficiency in an outdoor setting. Field practice includes basic navigation, travel, and survival, and an introduction to search and rescue. This course does not include an overnight campout.

<b>Prerequisite:</b>	None
<b>Time Commitment:</b>	Adequate classroom instruction to prepare students for a field session. There is no overnight campout included in this course curriculum.

<b>Fees:</b>	National—none; Division—varies; Local—varies
<b>Credential:</b>	NSP Certificate of Achievement
<b>Continuing education/refresher requirement:</b>	Attend local on-the-hill/trail refresher, audit/retake course, or attend continuing education seminars offered by MTR instructors.
<b>Instructor of Record:</b>	NSP Mountain Travel & Rescue Instructor
<b>Required Text:</b>	<ul style="list-style-type: none"> <li>• <a href="#"><u>Mountain Travel and Rescue (#509)</u></a></li> </ul>

### Mountain Travel & Rescue 1 (MTR-1)

This course provides participants with the knowledge and skills to travel and work in reasonable safety and comfort in the outdoor environment and to provide basic level assistance to a search and rescue team, including possible overnight operations. Field practice includes practice in navigation, backcountry travel, survival, basic search and/or rescue exercises, and an overnight campout.

<b>Prerequisite:</b>	None
<b>Time commitment:</b>	Adequate classroom instruction to prepare students for a field exercise that lasts through one night.
<b>Fees:</b>	National—none; Division—varies; Local—varies
<b>Credentials:</b>	NSP Certificate of Achievement
<b>Continuing education/refresher requirement:</b>	Attend local on-the-hill/trail refresher, audit/retake course, or attend continuing education seminars offered by MTR instructors.
<b>Instructor of record:</b>	NSP Mountain Travel and Rescue instructor
<b>Required texts:</b>	<ul style="list-style-type: none"> <li>• <a href="#"><u>Mountain Travel and Rescue (#509)</u></a></li> </ul> <p><b>Note:</b> Mountain Travel &amp; Rescue Fundamentals and</p>

	Mountain Travel & Rescue 1 are parallel rather than sequential courses. Students may select one or the other course, depending on area needs and requirements.
--	--

## Mountain Travel & Rescue 2 (MTR 2)

Mountain Travel & Rescue Level 2 is designed as a follow-up course to MTR-F and/or MTR-1. This course provides more in-depth training and field work in land navigation, search and rescue, rope rescue, improvised toboggan construction, survival skills, and emergency shelter construction that students can utilize during the length of the course.

<b>Prerequisites:</b>	<ol style="list-style-type: none"> <li>1. Mountain Travel &amp; Rescue Fundamentals, Mountain Travel &amp; Rescue 1, or a basic search and rescue course from an approved agency may substitute, as determined by the division MTR supervisor.</li> <li>2. Level 1 Avalanche, Introduction to Avalanche Safety and Rescue courses, or any equivalent avalanche course from an approved agency, as determined by the MTR division supervisor.</li> </ol>
<b>Time commitment:</b>	<ul style="list-style-type: none"> <li>• Adequate preparation training prior to field session.</li> <li>• Minimum two days and one overnight with adequate practice for field session.</li> <li>• Up to two additional days and nights may be used, not necessarily consecutively, to better prepare students for the final field exercise.</li> </ul>
<b>Fees:</b>	National—none; Division—varies; Local—varies; Permit fees—if applicable
<b>Credentials:</b>	NSP Certificate of Achievement
<b>Continuing education/refreshers requirement:</b>	Attend local on-the-hill/trail refresher, audit/retake course, or attend continuing education seminars offered by MTR instructors.

<b>Instructor of record:</b>	NSP Mountain Travel and Rescue instructor
<b>Required texts:</b>	<ul style="list-style-type: none"> <li>• <a href="#"><u>Mountain Travel and Rescue (#509)</u></a></li> </ul> <p><b>Note:</b> Mountain Travel &amp; Rescue Fundamentals and Mountain Travel &amp; Rescue 1 are parallel rather than sequential courses. Students may select one or the other course, depending on area needs and requirements.</p>

### **Mountain Travel & Rescue Refreshers**

Mountain Travel & Rescue training is often part of the annual on-the-hill/trail refresher depending on area management and patrol needs. However, separate refreshers specifically oriented to local SAR procedures and needs may be offered as needed. Patrollers are encouraged to audit or retake Mountain Travel & Rescue courses to refresh and update skills. Instructors may offer continuing education seminars to update students and instructors Mountain Travel & Rescue Instructor's Manual on new information and to practice and refine various MTR skills.

### **Course Objectives**

The participants will learn the categories that follow to fulfill the course objectives.

### **PERSONAL SURVIVAL**

#### **Body Warmth**

- understand how the body produces and loses heat, and
- understand the consequences of heat imbalance.

#### ***Essential Content***

- A. Heat gain
- B. Heat loss
- C. Maintaining comfortable body temperature
- D. Personal requirements



### **Water/Hydration**

- understand the symptoms and effects of dehydration and proper hydration,
- discuss how to secure safe water in the outdoors,
- demonstrate how to keep water from freezing during transport and in camp.

### ***Essential Content***

- A. Water requirements
- B. Water balance
- C. Symptoms and effects of dehydration
- D. Water sources

### **Food and Nutrition**

- discuss and give examples of the proper types, amounts, and proportions of food needed for outdoor travel and in emergency situations,
- explain the importance of planning and re-packaging food before a trip, and
- demonstrate ways to properly store and transport food.

### ***Essential Content***

- A. Nutrition
- B. Calories
- C. Food groups
- D. Planning
- E. Transport
- F. Storage and preparation

### **Clothing**

- demonstrate the purpose and techniques of layering, venting, and other dressing strategies including appropriate materials, and

- demonstrate the basics of proper footwear and foot care.

### ***Essential Content***

- A. Clothing materials
- B. Dressing strategies
- C. Special clothing needs
- D. Other considerations

### ***Sleeping Gear***

- describe the features to look for when selecting a sleep system,
- discuss various ways to pack a sleep system, and
- select and use an appropriate sleep system for the field exercise.

### ***Essential Content***

- A. Sleep systems
- B. Care of sleeping system
- C. Sleeping gear accessories

### ***Emergency Shelters***

- Discuss equipment, materials, and techniques for building shelters in a variety of environmental settings and in different climates, and
- Construct at least one type of emergency shelter during an outdoor exercise.

### ***Essential Content***

- A. Definitions and characteristics of emergency shelters
- B. Use of various tools and techniques for shelter construction
  1. Tarps, tents, shovels, snow saws, other
  2. Natural features

### **Essential Equipment**

- understand how to select additional equipment intelligently, and
- bring the appropriate equipment on the field exercise.

### ***Essential Content***

#### A. Equipment selection

1. Trip objectives
2. Conditions
3. Makeup of group

#### B. Discussion points

1. Cost vs. quality
2. Multi vs. single function
3. High-tech vs. low-tech
4. Disposable vs. repairable
5. Working vs. emergency
6. Utility vs. fashion
7. Weight vs. “being prepared”

## **TRAVEL**

### **Travel Equipment**

- discuss advantages and disadvantages of types of travel equipment and strategies relative to terrain, season, and conditions,
- discuss different styles of packs and describe how to select a pack appropriate for the style of travel and trip length, and
- select the appropriate equipment to successfully complete the field exercise.

### ***Essential Content***

#### A. Overview of the types of travel

1. Walking
  2. Travel on snow
  3. Other modes
- B. Packs

### **Land Navigation**

- use a map scale to estimate the distance between points on a map,
- estimate elevation on a contour map,
- correlate a map with features in the field,
- anticipate the time to travel to a point on the planned route,
- explain how to determine and adjust local magnetic declination,
- explain the means of finding one's position by being at a mapped point or at intersecting lines of position,
- explain the calibration of an altimeter, and the use of altimeters in navigation,
- demonstrate the ability to orient the map with a compass and GPS
- demonstrate the ability to use a compass and GPS with a map to set and follow a reading, take a direction to a point in the field, and transfer it to a map.

### ***Essential Content***

- A. Maps
- B. Map scale
- C. Contour maps
- D. Grid systems
- E. Compass, GPS, and altimeter
- F. Magnetic declination
- G. Orienting a map in the field
- H. Using a compass and GPS in the field

I. Transferring a line of travel to a map

**Route Selection**

- recognize the importance of route planning, and
- describe the procedures for traveling through hazardous terrain.

***Essential Content***

- A. Route planning
- B. Hazard awareness and travel techniques

**BACKCOUNTRY CONSIDERATION**

**Camping and Environmental Issues**

- explain how to minimize environmental impact from washing, garbage, sanitation, and fires,
- describe various accepted methods of waste disposal for all seasons,
- understand and obey local regulations designed to protect the environment,
- describe various ways to obtain external heat,
- discuss ways to store food out of the reach of animals,
- discuss different types of shelters suitable for camping,
- use appropriate equipment and techniques to spend a night camped out.

***Essential Content***

A. Environmental impacts

1. Washing
2. Garbage
3. Sanitation
4. Local regulations

B. External heat

C. Camping

## **Weather**

- know where to obtain current weather forecasts, weather data, and avalanche information, and
- recognize the impact of weather on trip planning and execution.

### ***Essential Content***

- A. Current weather information
- B. Basic weather patterns
- C. Local influence on weather
- D. Hazardous weather

## **Teamwork, Group Dynamics, and Leadership**

- understand the elements important to effective teamwork and the different roles within a team,
- recognize the importance of personal strengths and weaknesses as they affect a team
- demonstrate effective team participation in the field exercise.

### ***Essential Content***

- A. Teamwork and group dynamics
  - 1. Communication and objectives
  - 2. Effects of stress
  - 3. Assessing strengths and weaknesses
- B. Handling roles effectively
- C. Team membership
  - 1. Concepts
  - 2. Teamwork
  - 3. Relationship to leader

## **Extended Backcountry Care**

- The predisposing factors
- Prevention, assessment, and emergency care of medical problems that are commonly encountered in the nonurban setting for extended periods of time.

### ***Essential Content***

- A. Frostbite
- B. Hypothermia
- C. High-altitude illness
- D. Sunburn, windburn, and snow blindness
- E. Blisters and subungual hematoma (blister under nail)
- F. Lightning injury

## **SEARCH & RESCUE**

### **Search & Rescue**

- discuss the major elements and sequence of a search plan,
- discuss the importance of the lost person profile and of managing clues effectively,
- describe the chain of command and coordination with local regulatory agencies using Incident Command Structure
- describe the basic search techniques and their application,
- discuss how to help ones self if lost,
- participate as an effective team member in a mock SAR exercise.

### ***Essential Content***

- A. Search organization
- B. Search techniques
- C. Search strategy
- D. Search personnel roles
- E. Self-rescue

### **Roped Travel**

- be aware of and practice as needed traveling on icy flat and/or low angle terrain,
- practice self arrest of a fall on flat and low-angle slopes (only if used locally),
- be aware of and practice, if locally needed, tying more than two people into a rope.

### ***Essential Content***

#### A. Knots and hitches:

Students should be able to confidently tie and appropriately apply at least one knot from each of these basic use categories.

1. Tying two rope ends together—same diameter rope
2. Tying two rope ends together—different diameter ropes
3. Rope end hitches
4. Friction hitches
5. Tying a person into the middle of a rope

#### B. Harnesses and other equipment

#### C. Safety line system

#### D. Anchor systems

#### E. Belaying

#### F. Descending

#### G. Ice axe and crampons (awareness to application, depending on local need)

#### A. Roped travel

### **Rope Rescue**

- discuss emergency extrication techniques such as lowering and raising
- demonstrate the effective rescue and transportation of a patient during a mock exercise.

### ***Essential Content***



- A. Roped rescue overview
  - 1. Control
  - 2. Patient safety
  - 3. Environmental concerns
  - 4. Rope etiquette
  - 5. Patient packaging
- B. Rescue systems
  - 1. Anchor systems
  - 2. Lowering techniques
  - 3. Raising techniques
- C. Safety considerations
- D. Backcountry rescues
  - 1. Transportation
  - 2. Manpower and equipment considerations

## TEXTS

### **Mountain Travel & Rescue**

The required text for NSP's Mountain Travel & Rescue Fundamentals, Level 1, and Level 2 courses, this manual is designed to equip the students of the MTR courses with the knowledge to enjoy, travel, and survive in the outdoor environment and assist as members of search and rescue and rope rescue teams. Topics include personal survival, backcountry navigation and awareness, basic search and rescue, and basic rope work and rescue techniques.

### **Mountain Travel & Rescue Instructor's Manual**

This manual serves as the guideline for all MTR courses and is a must for all instructors teaching MTR-F, MTR-1, and MTR-2. It includes program descriptions, lesson guides, instructor information, and course activities. This is the first manual to be "e-published" by the NSP, and is available in a PDF format from each member's bookshelf on his or her member page.