

MOUNTAIN TRAVEL AND RESCUE 1

COURSE INFORMATION BOOKLET



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1 INTRODUCTION

Thank you for registering in the Mountain Travel and Rescue 1 class. This is the student booklet for the course, please make sure you review **all** the material before the class and complete the pre-test.

Please review the text book “Mountain Travel and Rescue” particularly the following details:

- Read all of chapters ... #1 through 7.
- Review chapters ... #8 (pgs. 40-49),
- Review #9 “Roped Travel” (pgs. 59-65) and “Rope and Knots” section.
- Read all of chapters #10, 11, 12
- Review chapters #13, 15, 16 (and/or Additional Search And Rescue Overview).

As we approach the field class, please contact the courses’ instructor of record if you have any questions or for some reason you won’t be able to attend the weekend.

2 AGENDA

Note: the agenda is subject to change at the discretion of the instructor of record.

2.1 SATURDAY

7:00AM PINECREST COMMUNITY CENTER

BE ON TIME! You will find the Pinecrest Community Center on Pinecrest School Road off Dodge Ridge Road (after Meadowview campground and before Camp Oski). Leave your equipment (packs) in your vehicles for now. **Bring your Pre-Test, maps, compass, and writing materials to take notes.**

07:00 Check-in and Pre-test check-off, community college sign-up and sign liability release.

07:30-12:00 Classroom Presentations – Pre-test Review – Team Assignments
Note! All students will be organized into teams and shelter groups prior to proceeding to the campsite.

07:30 – 07:45 Introductions of Instructors & Group Leaders (15 mins)

07:45 – 08:00 Hypothermia & Frostbite (15 mins)

08:00 – 08:15 Water and Sanitation (15 mins)

08:15 – 08:45 Winter Route Planning & Introduction to Avalanche (30 mins)

08:45 – 09:15 Introduction to SAR (30 mins)

09:15 – 09:30 Break (15 mins)

09:30 – 10:30 Map and Compass (1 hour)

10:30 – 11:00 Knots (30 mins)

11:00 – 11:15 Shelters (15 mins)

11:15 – 11:30 Quick Pre-test review (15 mins)

11:30 – 11:40 Team Assignments, Final Classroom Comments, Hand Out Equipment (10 mins)

11:30 – 11:45 Hand Out Map Problem – Leave in Teams for Trailhead (15 mins)

12:00 Pre-assigned teams proceed to the campsite under team leaders direction, stopping for lunch at team leaders discretion. Team Leaders check in with “Campsite Director” upon arrival. Campsite Director will assign snow shelter construction sites.

13:00-17:00 Snow Shelter construction (*2-3 persons, max. per shelter*). All shelters will be the straight walled, cut snow blocks, (modified igloo) enclosure – with your 10x12 foot tarp tautly stretched across the top as your roof.

17:00-18:00 Dinner – Team cooking is advised. All cooking and meals are to be prepared and eaten in the main kitchen area (*site to be determined*).

???-??? Night Search & Rescue Exercise - duration of search is determined by the success of locating a lost subject. ***You must be prepared to travel with light packs, extra warm clothing, water, map & compass, flashlight.***

2.2 SUNDAY

7:00AM PINECREST

07:00-08:30 Breakfast – Team Cooking – main kitchen area only.

08:30-09:00 Prepare for field stations. Instructors prepare for stations.

09:00-14:00 Field Stations – Rotations: 55 Mins each with 5 minutes between

09:00 – 10:00	Rotation 1
10:00 – 11:00	Rotation 2
11:00 – 12:00	Rotation 3
12:00 – 12:45	Lunch
12:45 – 13:40	Rotation 4

- Avalanche – Probes Line, Transceivers, Snow Assessment.
- Emergency Bivouacs & Fires
- Orienteering/ Map & Compass – GPS.
- Fundamental Rope Handling/Knots – Z-pulley Rescue Systems.

14:00-14:30 Final Debriefing at campsite kitchen site. Everyone must attend.

14:30-15:30 Break Camp (*all personal excrement and litter must be individually carried out*)

15:30-16:30 Teams return to trailhead at Team Leaders direction. The course director prior to the hike out must release each team from the campsite.

16:30-? **All participants** (*students, instructors, advisors*) are to remain at the trail head, with their team leaders, until all course equipment is accounted for and you are released by the course director ... **NO EXCEPTIONS !!**

3 LOGISTICS

Before Class Accommodation:

The Pinecrest Community Center will be available to sleep in on Friday night. The center will be opened on Friday night (contact the instructor of record for time estimates of when). Class starts at the same location 7 AM Saturday morning. (The Community Center is located on Pinecrest School Rd, - first right-hand turn on Dodge Ridge Rd).

NOTE 1: This is courtesy accommodation. The community center can be noisy throughout the night - doors slamming and people snoring. Please bring earplugs and realistic expectations regarding the amount of sleep you will get.

NOTE 2: Cooking is not allowed in the Pinecrest Community Center at any time.

Shelter and Cooking Groups:

Find up to 3 people to build a shelter with and share cooking responsibilities. Remember to bring extra fuel – the cold weather means that cooking times are long and stoves are less efficient. **Contact one of the instructors if you do not have a shelter and cooking partner prior to class.**

Meals:

You will need a total of 4 meals (2 lunches, 1 dinner, and 1 breakfast). Saturday morning doughnuts and bagels are provided at the start of class. Lunches need to be on-the-go style as there will not be time for cooking.

Mode of Transport:

Your choice is to either **ski** or **snowshoe** to/from campsite location. If you will be skiing – you are encouraged to do so on touring cross-country, waxless ski or if using wax type skis, bring climbing skins. Snowshoes are recommended especially if you are not comfortable carrying a heavy pack on skis. Wear an avalanche beacon if you have one (*not a required item*)

Individual – Required Basic Equipment:

(It is recommended you borrow or rent equipment you do not own now, and are unsure of purchasing for future use)

- Skis – Poles – Boots – (*or snowshoes with ski poles*)
- 10 Essentials (*see equipment list*)
- Warm synthetic type clothing (*minimum of two layers*) **(COTTON FORBIDDEN!!)**
- Waterproof Shell or Parka and pants
- Warm knit type cap – mittens – gloves
- Good cold temperature (*15-25 degrees, or lower*) synthetic sleeping bag
- Full-length (*insulate*) foam pad
- Individual waterproof tarp (*8'x10' min.*)
- Backpack large enough to contain everything

- Necessary Bivouac items to create and emergency overnight shelter, and start a fire.

Group Shelter Requirements: *POSITIVELY NO TENTS!*

- Everyone will construct a straight walled (*semi-igloo*) snow shelter. The overall dimensions to be approximately 8'x10' with 3'-4' high cut snow-block walls.
- Each shelter can accommodate two to three people (*two recommended*)
- Each shelter will require one large (*10'x12' min*), waterproof tarp for the roof - *each shelter group must bring their own tarp.*
- Each shelter group must have at least 50' of light cord to tie down the tarp.
- Bring your own sturdy snow shovel and snow saw (*backpack type*) if you have them
- Shelters are constructed of cut snow blocks ... cut with the shovels and saws. (*Instructor may have a limited supply of extra shovels and saws*)
- A few small candles are wonderful inside your shelter – also bring an extra piece of insulite foam to sit on inside your shelter and in the kitchen.

Navigation:

- Bring a good compass
- Bring a plastic whistle, worn around your neck.
- You will need a map of the area (*7.5 min. topo – “Pinecrest”*) (black & white copies will be available)
- You will need a flashlight (*headlight preferred*) with new batteries (*extra set of batteries and a bulb are recommended*)

Group and Individual Items - Food & Water:

- Minimum of two liters of water in a plastic canteen or water bottle (*wide neck opening recommended*)
- Small backpack type stove with at least one – 1qt cooking pot (*this can be a cooking group shared item*) (*don't forget lot's of matches in a waterproof container*)
- Eating utensils (*plastic recommended*)
- Small, sharp pocket knife
- Plastic cup
- Personal lunch and snack foods for two days
- Hot Dinner – Easy cook – Nourishing – Taste good
- Hot Breakfast – Easy Cook – Nourishing – Taste good
- One complete day of extra emergency rations – No Cook – Nourishing

Individual First Aid Items:

Minimum personal first aid items you feel you must have – Personal Medications – Sunscreen – Lip Balm – Sun Glasses – Adhesive Strips

Sanitation:

- **Note! – All personal litter and excrement must be individually packed out ... this will be your own responsibility.**
- Mountain Money (*toilet paper*)
- 5-10, 1gal. Sized zip-lock type baggies
- Small plastic garden trowel (*pooper scooper*)
- Poop Tube (*we may have some of these for rent on Saturday.*)

Columbia College Vocational Education Program:

Pinecrest Nordic Ski Patrol in conjunction with Columbia College is able to earn education money through registering our courses with the college. This helps the Patrol and supports the local colleges and universities so we can continue to offer these classes. What does that mean for you? You will be asked to register as a student of the college during the check-in time of the course. Registration is free. Forms and instructions will be handed out at the class.

4 GEAR LIST

WINTER TRAVEL & CAMPING 10 ESSENTIALS CATEGORIES		
1. CLOTHING	5. WATER & FOOD	8. PACK
2. FOUL WEATHER GEAR	6. COOKING GEAR	9. FIRST-AID & PERSONAL COMFORT
3. FOOTWEAR	7. NAVIGATION & SURVIVAL	10. TRANSPORT
4. BIVOUAC		

PNSP– recommended minimum equipment list required to complete the course

- 1. CLOTHING**
- ___ Long Sleeve Shirt/Sweater (*polypro, pile, wool, wool blend*)
 - ___ Pants (*polypro, pile, wool, wool blend, ski pants*)
 - ___ Warm Jacket/Sweater (*polypro, pile, wool, wool blend*)
 - ___ Knit Stocking Cap/Balaclava
 - ___ Mittens/Gloves - 2 pair (*polypro, pile, wool*)
- 2. FOUL WEATHER GEAR**
- ___ Waterproof/Water-Repellent Parka or Shell – with hood
 - ___ Long Sleeve Thermal Underwear (*polypro, wool, wool blend*)
 - ___ 2-3, large heavy duty plastic garbage bags (*30gal. size*)
 - ___ 4-6, one gallon Ziplock plastic bags
- 3. FOOTWEAR**
- ___ Ski Boots or well waterproofed Hiking Boots
 - ___ Gaiters (*calf height*)
 - ___ 2 pair heavy hiking socks (*wool, wool blend*)
- 4. BIVOUAC**
- ___ Shelter Cover – rip-stop nylon or heavy plastic, tarp (*minimum 10'x12'*) * **can be a shared item**
 - ___ Ground Cover – nylon or heavy plastic (*min. 5' x 8'*)
 - ___ 50°-75°, 1/8" camp cord (*nylon parachute cord*)
 - ___ 10-20 degree Sleeping Bag (*synthetic, hollofil*)
 - ___ Sleeping Pad (*full length ensolite or thermarest*)
- 5. WATER & FOOD**
- ___ 2 liters/quarts of water (*wide mouth nalgene*)
 - ___ Water Filter or purification/chemical tablets
 - ___ 2 Non-Cook Lunches (*hi-energy, nutritious*)
 - ___ 1 Hot (*easy preparation*) Dinner (*hi-carbo*)
 - ___ 2 Hot (*easy preparation*) Breakfast (*tasty, nutritious*)
 - ___ Misc. Trail Snacks (*Gorp-candies-cookies-jerky-etc.*)
 - ___ Hot Beverages (*cocoa, Jell-O, cider, tea*)
 - ___ 1 days extra emergency rations
- 6. COOKING GEAR**
- ___ Pack Stove-with extra fuel (*good for cold weather performance, easy to use, reliable*) * **can be a shared**
 - ___ 1 quart Cooking Pot with lid
 - ___ Plastic Cup/Bowl and utensils
 - ___ Matches in Waterproof container (*wood kitchen stick matches – lots*)

- 7. NAVIGATION & SURVIVAL**
- ___ Topographic map of the area
 - ___ Compass
 - ___ Whistle of a lanyard – AROUND YOUR NECK
 - ___ Signal Mirror (*or the mirror on a comparable compass*)
 - ___ Headlamp (*recommended*) or flashlight - with extra batteries & extra bulb
 - ___ Multi-Blade pocket knife or comparable tool (*Leatherman*)
 - ___ **MORE MATCHES** in waterproof container (*wood kitchen stick matches*)
 - ___ Candles (*several short/ medium fat ones*)
 - ___ Snow Shovel (*compact & durable*)
- 8. PACK**
- ___ Backpack – large enough to stow all your gear inside (*internal frame pack recommended*)
 - ___ Stuff Sacks and plastic bags for all your gear
- 9. FIRST-AID & PERSONAL COMFORT**
- ___ Sunscreen (*15 to 20 SPF rating*)
 - ___ Dark Glasses or Goggles (*95 to 100% UV protection*)
 - ___ Lip Balm (*Chapstick*)
 - ___ Moleskin or Second Skin
 - ___ Band-Aids (*assorted sizes, at least 12*)
 - ___ Medical Adhesive Tape (*2" recommended*)
 - ___ Bandaging materials (*4x4's, roller gauze, cravat*)
 - ___ Personal Prescriptions and Medications
 - ___ **TOILET PAPER** (*include a small trowel & several small Ziplock plastic bags to haul your poop out*)
- 10. TRANSPORT**
- ___ Skis (*waxless-backcountry touring or wax type with "Skins"*)
 - ___ Snowshoes (*Bearclaw or similar small type*)
 - ___ Ski Poles (*correct length for cross-country touring*)

5 TIPS AND TRICKS... FOR A GREAT WEEKEND.

The following is a list of tips and tricks used by the Pinecrest Nordic Ski Patrollers to keep warm, safe and comfortable during the MTR 1 field class.

Before Class:

- ❖ Pack the weekend before the class to make sure you can fit everything in your pack comfortably.
- ❖ Test your stove BEFORE you leave to make sure you know how to use it and whether it works.
- ❖ Pack some earplugs if you want to sleep at the Community Center before the class.
- ❖ Check the local weather report for the weekend to see what type of conditions you'll be seeing.
- ❖ Organize a car-pool to Pinecrest.

Sleeping:

- ❖ Bring a complete change of underwear and thermal clothes, stowed in waterproof (Zip Lock) plastic bags, and get changed into these clothes before jumping in your sleeping bag. NEVER sleep in socks that you've worn all day. Sleep in tomorrow's socks instead.
- ❖ Wrap the end of your sleeping bag in a garbage bag or other waterproof clothing to keep it dry when it touches the end of the snow shelter. Better still; use a bivy bag to add warmth and protection.
- ❖ Use a close-cell foam mat as well as an inflatable mattress for comfort and warmth.
- ❖ Use a tarp or plastic sheet to keep your sleeping bag/pads off the snow.
- ❖ Fill a water bottle (with reliable water-tight seal) with hot water and take it into your sleeping bag. Why? a) It will warm all those cold places (like feet) when you first crawl into your bag. b) When you wake up thirsty in the middle of the night, you will have water to drink that is not icy cold. c) You'll have already-melted starter water to heat up for your breakfast oatmeal and hot chocolate.
- ❖ Take some snacks to bed with you so you can eat during the night to kick-start your metabolism to keep you warm.
- ❖ If you wake up in the middle of the night with a full bladder, go take care of it -- you will sleep warmer and more comfortably afterwards.
- ❖ Drink plenty of water to stay hydrated!

Travelling:

- ❖ Use ski poles even if you are snowshoeing for balance.
- ❖ Be sure to have a spare set of fresh batteries for your headlamp for night SAR.
- ❖ Drink plenty of water to stay hydrated!

Clothing:

- ❖ Bring multiple spare gloves and beanies to change into when they get wet.
- ❖ Wear gators if you don't have tall boots or snow cuffs on your over-pants.
- ❖ Water-proof your leather boots with snow-seal or beeswax.
- ❖ Don't wear boots that are too small or tight as it will affect your circulation and give you cold feet.
- ❖ No cotton!
- ❖ Expect to get wet when building snow shelters... use waterproof outer layers and have a change of clothes ready if needed.
- ❖ Dress in layers so you can add/remove as needed during the weekend activities
- ❖ Spread out your wet clothes with you inside your bag while sleeping... they will dry out overnight.
- ❖ Most important spare clothing items: extra socks and gloves!
- ❖ Stow all your extra clothing in waterproof (Zip Lock) plastic bags.

Food/Cooking:

- ❖ Bring a stove base or make a base out of cardboard and aluminium foil so your stove stays level while cooking.
- ❖ Bring food that is cooked simply by adding water or that can be heated up to save time and fuel.
- ❖ Use your snow-melting pot only for boiling water, and use a separate bowl/mug for your food. This way, you can keep melting snow/boiling water while you eat, and won't have to clean out your pot in between.
- ❖ Bring a closed-cell foam seat pad to sit on while cooking/eating
- ❖ Bring a lot of quick-energy foods, and eat regularly during the day to keep your metabolism burning
- ❖ If you like energy bars, make sure you can eat them without breaking your teeth if they get frozen.
- ❖ Bring a lid for your pots to help boil your water quicker.
- ❖ When melting snow, make sure to put some water in the bottom of the pot first to avoid scorching it.
- ❖ If you don't like "floaties" in your melted snow, bring a lightweight tea strainer to strain out all of the superfluous flora and fauna
- ❖ Drink plenty of water to stay hydrated!

Equipment:

- ❖ Use a sturdy broad blade snow shovel to help move and dig in snow.
- ❖ Bring extra plastic bags for storing your gear in to keep it dry.
- ❖ Use a snow saw for cutting blocks for shelter.
- ❖ Use zip-lock bags that have closing device or "double-seal" to make it easier to re-seal them with gloves on.

- ❖ If you are unsure whether or not to bring a piece of equipment or clothing, throw it in anyway – you won't be travelling too far so it won't be too hard to carry it.
- ❖ Don't forget sunscreen and a hat even if it doesn't look or feel sunny.

Shelters:

- ❖ Use a probe to make sure you can dig out your shelter without hitting buried obstacles such as tree stumps or large rocks.
- ❖ Measure out your shelter's surface area so you don't end up with an area too big to cover with your tarp.
- ❖ Drink plenty of water to stay hydrated!

6 ROPES AND KNOTS

6.1 Rope

Static: Static lines are the opposite of dynamic ropes and market their ability to NOT stretch under load. These are primarily used for rappelling, top-roping and hauling gear, however should NEVER be used for lead climbing.

Dynamic: The rope is designed to stretch at a designated percentage given a static load of a designated weight (i.e. 6.5% stretch on static load of 80Kg). The reason these ropes are designed to stretch is to minimize and absorb some of the impact of a fall - imagine taking a 20' fall w/ no stretch, you could snap your back in two! These ropes are used in any/all lead climbing to protect the climber by absorbing the impact of a large fall. This is the standard in rock climbing. These ropes can be used for rappelling, top-roping and hauling gear like it's cousin, the static rope, but understand that these practices will put more wear and tear on the ropes and cause them to wear out faster.

Caring for your Rope: (Brought to you from the Climbing Sports Group)

Basic Rope Care:

- ❖ Keep your rope clean-Dirt particles are extremely abrasive to ropes. Keep your rope off the ground at all times and flake it out on a tarp when climbing. Avoid stepping on your rope, since doing so can drive dirt particles deeper into the rope surface. Be especially careful around your rope when wearing crampons.
- ❖ Care for your rope correctly - Wash your rope in cold water with a mild, non-detergent soap. Rinse thoroughly and air dry. Never bleach or machine dry your rope. Store it loose in a rope bag when you're not using it and away from heat, sunlight and harsh chemicals.
- ❖ Use your rope correctly - Climbing ropes are designed for climbing only. Don't use yours for anything else (like roofing, tree-trimming or towing a car).
- ❖ Use proper rappelling techniques-Forget movie-style rappels. High-speed, smokin' rappels damage your rope sheath and bounding rappels create extremely high loads on your anchors and rope.
- ❖ Check your gear carefully-Before and after every climb, check your rope for signs of abrasion and/or sheath damage. While you're at it, check the rest of your climbing gear as well for signs of wear. Retire anything that shows damage.

Rope Retirement

The useful life of your climbing rope will depend on how often and how hard you use it. Ropes are not cheap, but neither is your life. Follow these basic retirement guidelines even if your rope shows no visible signs of wear:

Occasional use (every other weekend or so) - replace after 4 years. Weekend climbing - replace after 2 years. Sport climbing - the repeated short falls typically encountered when working sport climbing routes can be very hard on a rope. Replace every 3-6 months. NOTE: many climbing gyms replace ropes every few weeks. After hard falls - replace your rope after ANY hard fall. Also replace it if it has flat or soft spots, becomes stiff or shows sheath damage. In doubt? - if you're not sure, replace it!

HINT: Keep a climbing diary or logbook to help you track your rope usage time. Remember-it's your responsibility to know the history of the rope you're using and to determine when it should be retired.

References

The Mountaineers Mountaineering The Freedom of the Hills 6th edition 1997
John Long Climbing Anchors Chockstone Press 1993
David Fasulo Self Rescue Chockstone Press 1996
National Ski Patrol Mountain Travel and Rescue 1995

6.2 Knots

You will be required to tie the following knots:

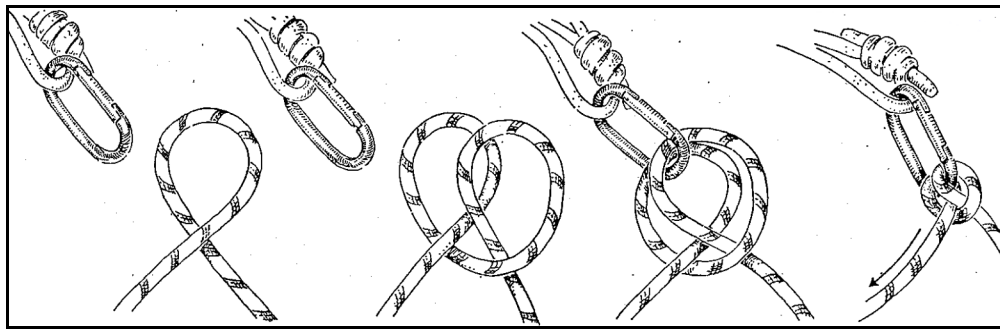


Figure 1 Clove Hitch

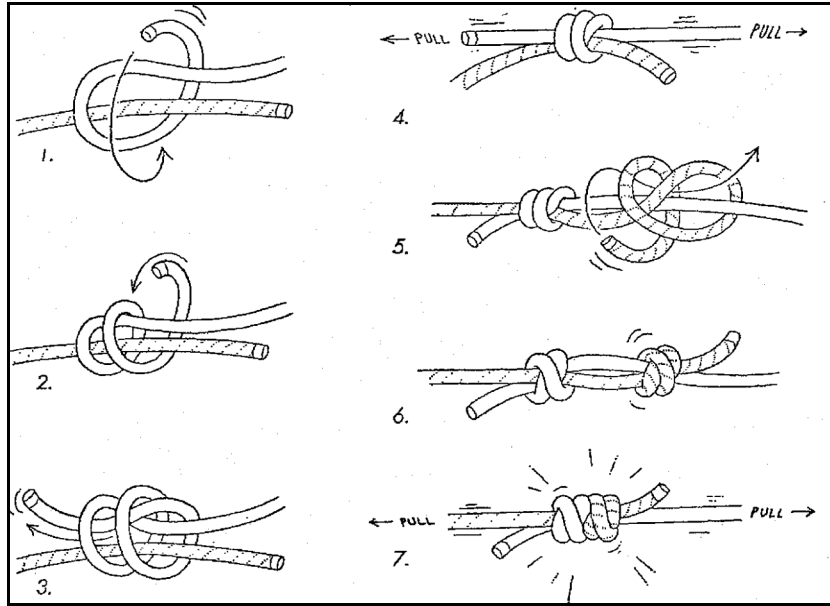


Figure 2 Double fisherman's Knot

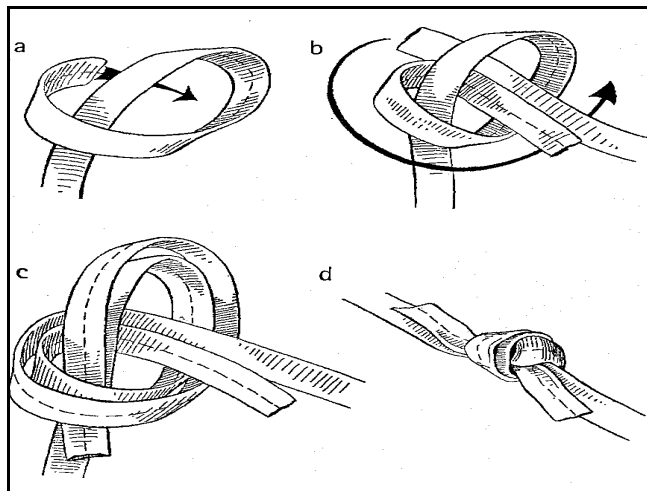


Figure 3 Water Knot

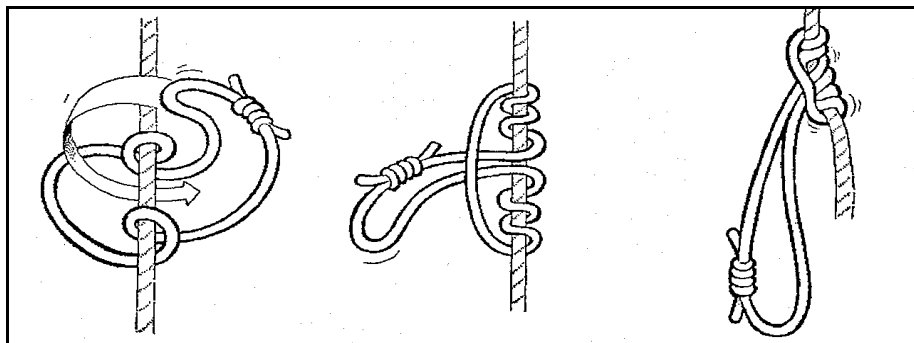


Figure 4 Prusik Knot

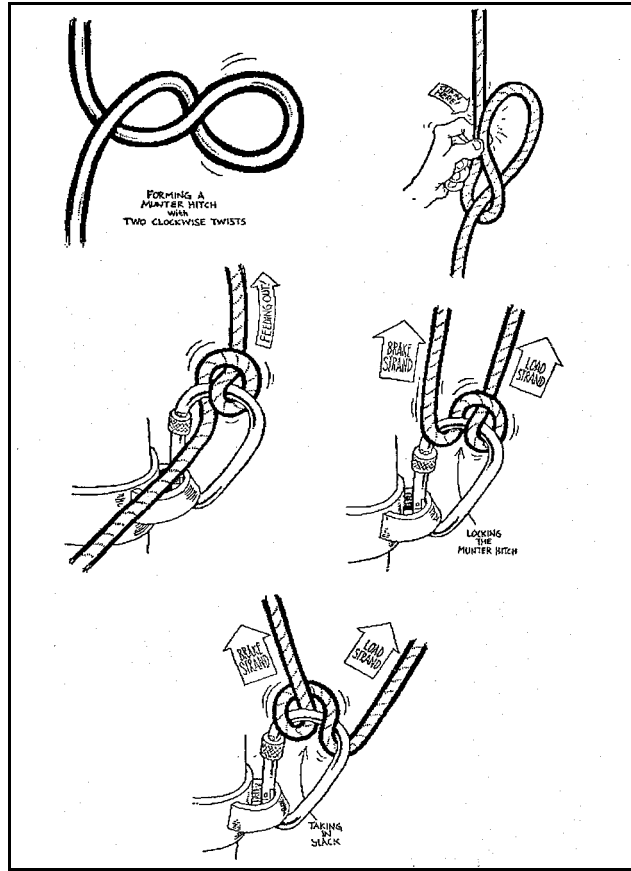


Figure 5 Munter Hitch

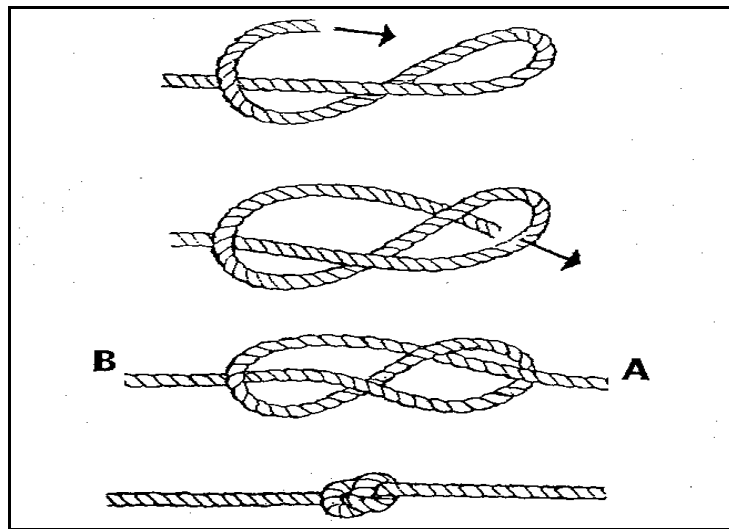


Figure 6 Figure Of Eight Knot

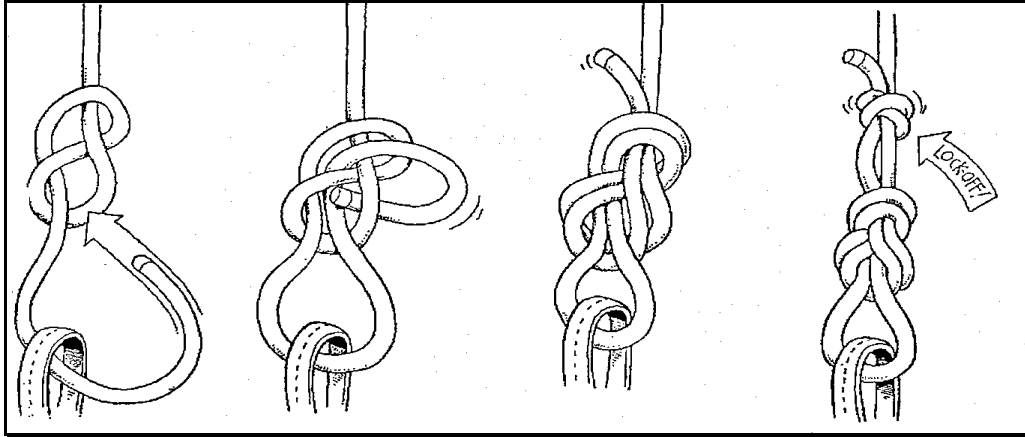


Figure 7 Figure Of Eight Follow Through

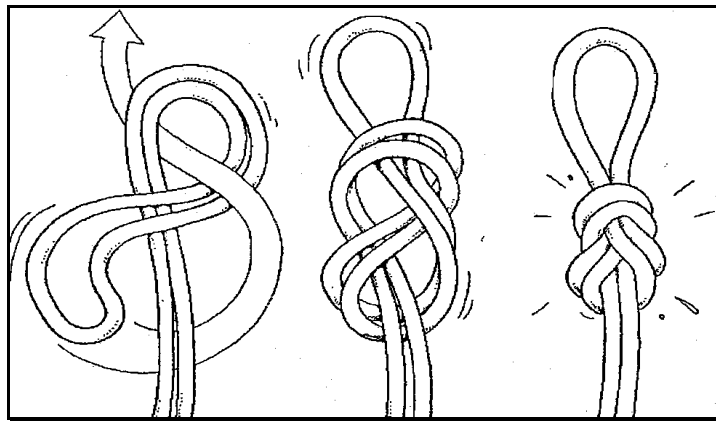


Figure 8 Figure Of Eight on a Bight

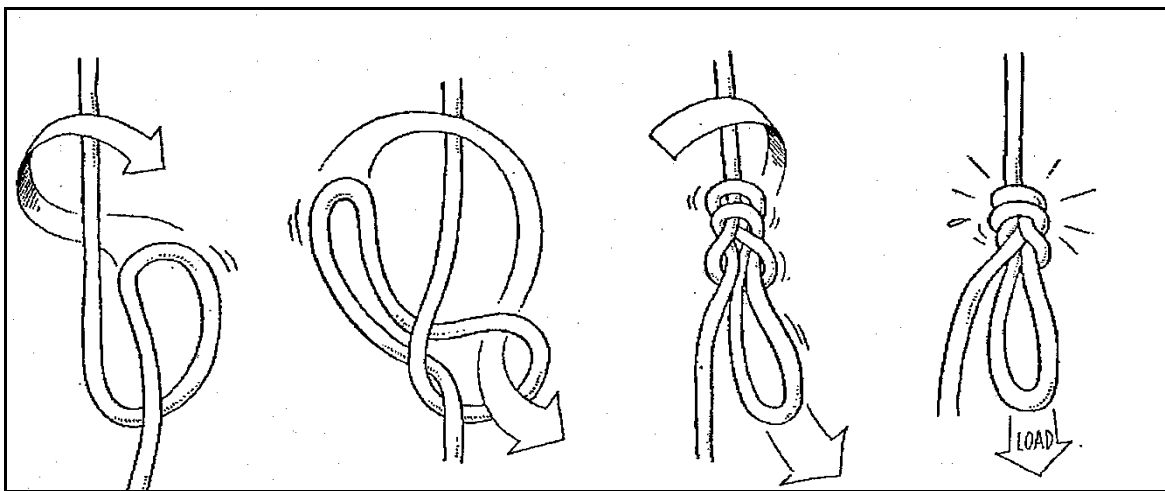


Figure 9 Inline Figure Of Eight Knot

7 SEARCH & RESCUE (SAR) ... AN OVERVIEW

To Quote from "Mountain Travel and Rescue" (chapter 16, page 132);

“Although much diversity exists in the extent to which ski area patrols become directly involved with Search & Rescue, it is worthwhile for backcountry travellers and NSP members to become familiar with Search & Rescue procedures, since all searches follow a standard format”

It has been our experience as Instructors - given the short amount of time we have for familiarization: that, this diversity is cause for much confusion and lack of understanding of the ICS (Incident Command System) and operational procedures of conducting a search & rescue operation/exercise. It is our hope that this brief overview, along with a thorough review of chapter 16 of the MT&R manual will help you in understanding and participating in search & rescue operations.

“SEARCH & RESCUE IS AN EMERGENCY”

Whether responding to an actual SAR callout, or participating in a planned exercise your attitude, actions and conduct must reflect this statement. The life of someone else may very well be depended upon your level of participation, or lack thereof.

As a SAR resource you are working under the auspices of a local regulatory agency (in the State of California this is usually the County Sheriff of incident), and assigned management personnel within the structure of the ICS system. The MT&R manual covers the primary positions and responsibilities of ICS management.

Two Key factors must always be kept in mind during the entire process of conducting SAR operations ...

Minimizing the risk to SAR personnel
The Welfare of the subject.

A couple points worth emphasizing:

Rescue Leader – This is the first trained response person notified of a lost person. This person takes on the immediate leadership responsibilities of the search until relieved by authorized local regulatory management personnel.

This Persons Immediate Responsibilities include:
Holding the **RP** (Reporting Person –Witness).
Notifying appropriate authorities.

Establishing a working communications system.

Assigning immediate roles of responsibilities.

Making the decision whether to begin a “**scratch or bastard search**” and a “**hasty search**” of the **PLS/PLK** (Point last seen/Point last known)

Formulation of the ICS builds as the SAR operation continues:

Scribe –

- Records all pertinent information

Search “Team Leaders” –

- Responsible for communicating between the Rescue Leader & Team members.
- Completing an assigned task.
- Safety of their team members.

Team Members –

Responsible for they’re own preparedness ... proper clothing, equipment, food & water and physical abilities and well-being.

Effectively participating as a search team member.

Field Leader –

This position may be added to provide on scene leadership assistance to the Rescue Leader ... who will be operating from an established “**Base**” location.

Review the MT&R Manual (page 136) for additional pertinent roles of responsibility that may be filled as the search continues.

Search Strategy:

As the MT&R Manual states ... “This section is intended to provide some guidelines on how to proceed with a search, but must remain slightly abstract because of two factors”.

Variable Factors – which determine the type of search undertaken:

The characteristics of the lost person.

Gathering as much information as is possible about the lost person.

Environmental conditions and terrain characteristics of the search area.

Survival & Rescue Equipment availability.

The numbers and status of searchers available, their experience.

Search Dynamics:

Establishing initial search boundaries.

Initial Search techniques established.

Media and Family influence.

Search strategy reviewed and revised as information and conditions change.

Expanding search boundaries as the search progresses.

Expanding search techniques.

Equipment resource changes.
Personnel resource requirements change with expanded boundaries and clue finds.
Regulatory Management changes.
Shutting down the search.

Search Types and Techniques:

These additional notes, along with your review of pages 132-133 of the MT&R Manual should help with your understandings of being a competent search team member.

Scratch or Bastard Search:

This is usually the first search technique conducted - using immediately available personnel.

It involves an immediate search of the most likely locations. I.E. Cafeterias/ café, lodge, bathroom, bars, shops, home, friends, etc. **It is of the utmost importance that throughout this initial effort and throughout all of the search operation that immediate contact/availability be maintained with the RP (Reporting Party).**

Hasty Search (Type-I):

This is the second technique, usually followed in an organized search. If resources area available, it may be conducted at the same time as the Bastard Search.

This search technique engages immediate resource availability of a trained, capable small team (3 – 6 searchers) to **conduct an expedient, high detection probability search of the PLS, and other known high probability locations.**

Emphasis is on speed and effectiveness without destroying clue/tracking and dog scent possibilities. This is a visually close spacing search (25-50 feet), usually following established trails or roads. The Team Leader may be part of this search formation, or may monitor in the “float” position, (behind the team). The team must stop and call “base” with any clues or tracks they come upon, and wait for “base” instructions before continuing.

This team may be asked to establish an immediate confinement perimeter, if possible and practical. This can be done by using marking ribbon across likely routes of travel or by stationing searchers at likely intersections and at trail heads, (also referred to as “Passive Techniques” – waiting for the lost person to come to you).

Saturation Search’s (Type-II and Type – III)

As the name implies, these are systematic, efficient, well-defined, segmented search area “clearings”. **The object is to “clear an area”,** to ascertain that the lost person is not with-in the assigned search area. *Emphasis is on “efficiency”*

In this type of search it is important to understand that **“efficiency” means** you are, with due urgency, looking for anything that could conceal or lead to the lost person, (production is for a high **“POD”** (Probability of Detection) per search-hour effort) ...

searchers must look-up, look-down, and look-all-around". Mental concentration should not be on looking for a person, but rather for clues that can lead to the persons location or their direction of travel.

The Saturation type search is considered the most difficult type of search pattern ... incorporating either an **"open"** or **"closed line"** formation of 3 or more searchers. In the **Type-II (open-line)** formation searchers are **spaced depending upon terrain variations, while maintaining visibility with the searchers on either side of them.** The line-search team will guide either left or right ... determined by the Team and Search Leaders. The guide person (either left, right or center) maintains a direction of travel by either a compass bearing or by use of a "handrail" (*a handrail is any existing terrain characteristic that will allow the guide person to follow a given direction ... roads, trails, fence line, rivers etc*) to maintain a given direction of travel. The far person(s), (furthest away from the guide) in the line usually marks their teams search boundary by tying survey ribbon in the trees, (or other suitable means to mark and identify the search area just covered).

Line formations, in both the Open and Closed search patterns are often staggered ... *leading off of the guide person* ... with each searcher following 2-3 feet behind the person they are guiding off of. The Team Leader usually remains in a "float position", following at the rear of their search line where they can monitor the entire line. Communications between members should be minimal throughout the line search process. Regularly and loudly calling out the lost persons name should be done at the team leaders discretion. Any team member can stop the search line by calling "Team Halt", but only the Team Leader can resume the line by calling out "Team Advance".

The Type-III (closed-line) formation is the most "thorough", with team members only 10-15 feet apart (*or closer*). "Critical Spacing" must be close enough, with assured overlap, so that small clues are not overlooked. This type of search is often done on hands and knees. While this type of search pattern will result in the "Highest Clue Probability" percentages, it is conversely very slow and consuming - is extremely destructive to clues, - and is usually reserved for evidence search's or when all other search efforts have been exhausted.

Tracking:

Tracking is an acquired skill that takes determination, patience, and a willingness to learn - and should be left to those who have been trained in these particular specialties. However, as searchers it is our responsibility to always be **"track aware"**. It is of the utmost importance that physical track as well as scent articles not be destroyed or contaminated by a careless searchers intrusion or contact. In the event a searcher sense's that they have encroached upon a possible "track" or a potential "clue", they must immediately call a "team halt" and advise their Team Leader, and in turn the Search Operations Leaders. The search team does not continue the search pattern until instructed to do so by their team leader.

8 PRE-TEST

Name: _____ Date: _____

Patrol or Organization _____

This “pre-test” is to be completed prior to the scheduled class and presented at check-in for review. Do the best you can to answer all questions. *This is not a graded test.* It is intended to familiarize you with course content and to evaluate your current level of knowledge and experience. You are encouraged to use whatever resource materials you have available to answer the questions.

The primary resource for this “Pre-Test”, and the course, is the National Ski Patrol “Mountain Travel & Rescue Manual”. It is the required course text for all NSP students of this course. (Contact the course director to order)

The goal of the Mountain Travel & Rescue program is to provide you, the Winter Backcountry Traveler/Ski Patroller, with the essential skills necessary to live safely, comfortably, and to survive in the winter backcountry environment.

Upon completion the student will be expected to understand the principles of heat conservation, shelter construction, safe route travel, orienteering, knots, search and rescue, nutrition, and demonstrate competence of these skills in the field.

(If needed...you can use the back of the pre-test for additional space to answer questions)

1. Down maintains its insulating values when wet:

T F

2. Putting on a hat can decrease what two types of heat loss by 30 percent?

a.

b.

3. How is water lost from the body?

a.

b.

c.

d.

e.

4. Explain the importance of the “*Layering Principle*” in clothing selection and list the three basic layers:
 - a.
 - b.
 - c.
 - d.
 - e.
5. Your body loses heat through five mechanisms. Name them, and for each give a brief example of clothing that would minimize this heat loss:
 - a.
 - b.
 - c.
 - d.
 - e.
6. An 8-hour hike may increase your calorie requirements to more than 6,000 calories a day.
T F
7. Expected water intake per person on a mountaineering trip is:
 - a. One quart per day
 - b. Two quarts per day
 - c. Four plus quarts per day
 - d. Only as much as thirst dictates
8. Explain how you would keep water from freezing if:
 - a. While you are actively ski touring during extreme cold weather
 - b. At night while you are sleeping.

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9. Poor nutrition and dehydration, which frequently go together, have similar effects:

T F

10. List five symptoms of poor nutrition and dehydration:

- a. d.
- b. e.
- c.

11. With a drop in body core temperature from 98.6 to 96 degrees the human body may exhibit the following signs and systems:

- a. Atrial fibrillation and coma
- b. Pulmonary edema
- c. Intense shivering
- d. Difficulty in speaking and amnesia
- e. Muscular rigidity and jerky movements

12. Define the following:

- a. Bearing (azimuth)
- b. Magnetic North
- c. Declination

13. Name three different map grid systems.

- a.
- b.
- c.

14. Assuming a declination of 17 degrees East, convert the following bearings from *True to Magnetic (or vice versa)*:

- a. 010 Magnetic _____
- b. 237 True _____
- c. 010 True _____
- d. 352 Magnetic _____

15. What is the best size group for back-country travel _____?
WHY?

16. The strongest member of your party should always break trail when traveling through new deep snow:
T F
17. In an emergency, describe how two winter back-country travelers could navigate in a “*White Out*”:
18. The International ground-to-air distress signal “**X**” means:
a. No
b. Safe to land here
c. Need a doctor
d. Unable to proceed
e. All is well
19. Who is legally responsible for “*Search & Rescue*” operations in California?
20. Rapid changes in temperature and wind increase avalanche danger:
T F
21. When you see experienced mountaineers zip-up, put their coat hoods on, loosen their packs, undo ski safety straps and take pole straps off their wrist, you know there is concern about:
a. entering an un-avoidable avalanche zone
b. preparing to ski a steep powder slope
c. getting prepared for an in-coming harsh weather front
d. possibly has injured themselves and are in need of assistance
22. While traveling in the backcountry, a member of your party is buried in an avalanche. At what point would you go, or send someone else for help:
a. Immediately WHY?
b. In fifteen minutes
c. In thirty minutes
d. In one hour
23. For practical purposes of providing maximal protection from sunburn, the winter back-country traveler should be using sunscreen with a **SPF** (sun protection factor) in a range of _____ to _____.

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24. If a person ingests a minute quantity of "***Giardia Lamblia***", infection can occur leading to nausea and cramps. Name at least three other possible symptoms:

- a.
- b.
- c.

25. Name three proven treatments for water purification:

- a.
- b.
- c.

26. In a winter environment, trash/garbage, including human waste should be:

- a. burned
- b. packed out
- c. buried no less than 8 to 12 inches in the snow, away from people
- d. left out to decay

27. Illustrate by drawing (*use a separate piece of paper*) an emergency shelter for each of the following situations:

- a. Deep snow above timberline.
- b. Deep snow in timber
- c. Shallow snow in timber and brush