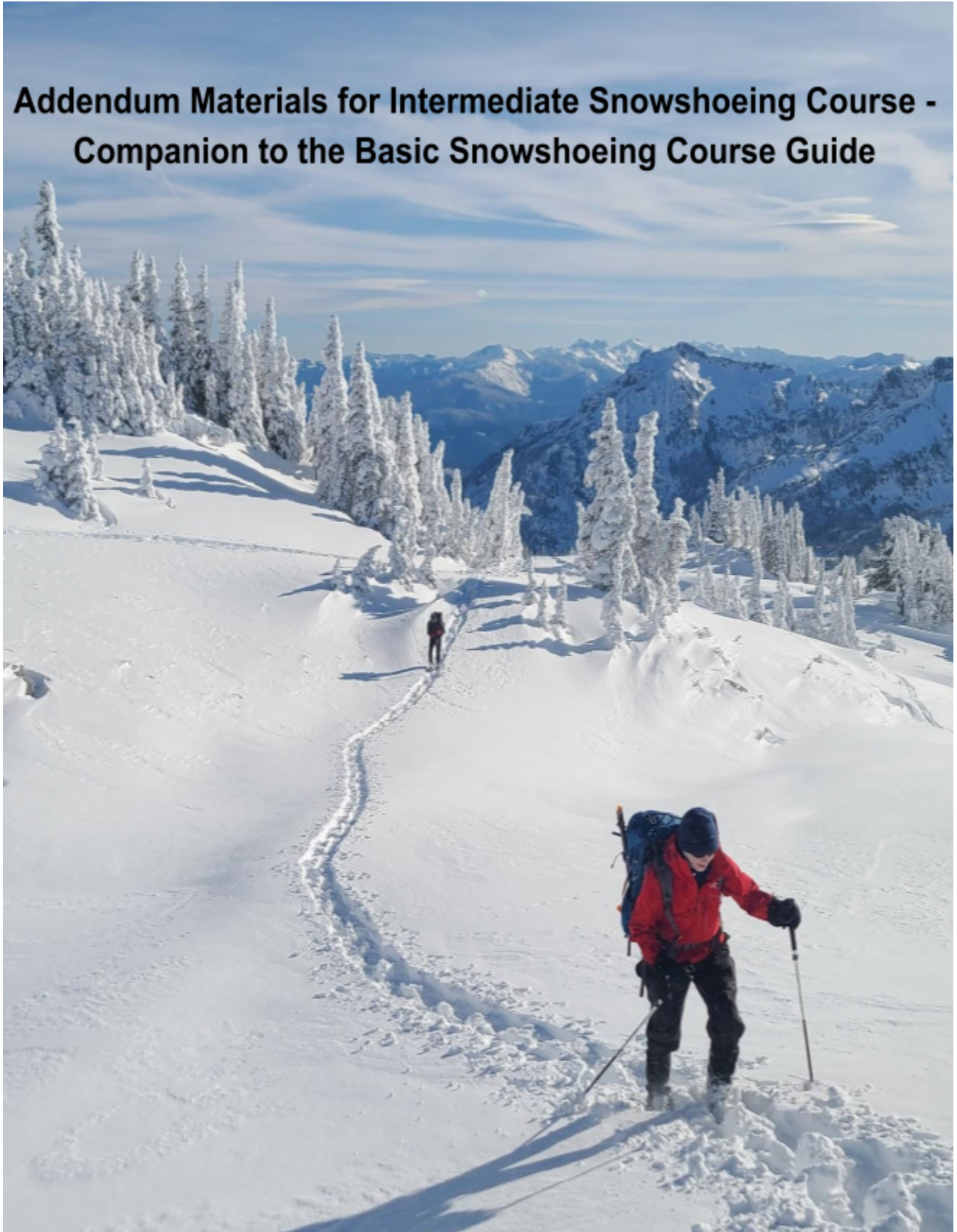


## **Addendum Materials for Intermediate Snowshoeing Course - Companion to the Basic Snowshoeing Course Guide**





# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

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# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## INTRODUCTION

The goal of this course is to teach students how to travel confidently in the backcountry during the winter months. We'll show you the equipment you need to make even a challenging trip a comfortable experience.

You'll learn the techniques you need to know to ascend and descend slopes on snowshoes. You'll find out how to use a map and compass, online mapping tools in order to choose the best route to your destination. We'll discuss the unique hazards that winter can present and how to recognize them and prevent problems. We'll practice the Seven Steps to Incident Response, a long-time Mountaineers method of handling incidents in the field. We'll introduce you to nuances around avalanches, incorporate avalanche and weather forecasts into your planning, and demonstrate the use of avalanche beacons, shovels, and probes. You'll also learn to build an emergency survival shelter simply with the gear you have on your back.

Instruction is geared to enjoying easy, moderate, strenuous, or very strenuous snowshoeing trips – usually with an alpine lake or non-technical summit as a destination. The course does not cover technical or roped rock or glacier climbing.

This guide to the Intermediate Snowshoeing Course is a supplement to the [Basic Snowshoe Course Guide](#). You'll find handy checklists and other information to help you through the course.

Keep in mind that The Mountaineers is a club, not a guide service. The Snowshoeing Committee, instructors, and trip leaders are volunteers who will spend many hours helping you learn the pleasure and techniques of snowshoeing. You are an equal participant, responsible for your safety and progress in the course and on all outings.

We also have a [Snowshoeing website](#), where you'll find current information on trips, courses, and more such as additional courses, trips, how to become a leader or volunteer at class or with us at the committee level.

### Course Lectures

The course includes two lectures intended to explain the knowledge and skills needed to venture into the backcountry on snowshoes, supplement the reading materials, provide specific information on the upcoming field trip, answer questions, and clarify policies and procedures.

### Course Field Trips

The field trips are your opportunity to practice the techniques presented in the lectures and reading material under the guidance of experienced instructors. Each field trip covers material in a limited amount of time.

Your performance on the field trips will be evaluated and discussed with you by your instructors. In order to get the most benefit out of each field trip, you should do the following:

- Prepare for the field trip. Review lecture material, reading material, and handouts.
- Practice the techniques beforehand, if possible.
- Be prepared for a full, long day at the field trip.
- Arrive early enough to park and make whatever preparations are necessary so you can be ready to begin at the starting time.

Please remember that your instructors and leaders are all volunteers. They all have something to teach you and deserve your attention and courtesy. Everyone is there to help you and to answer your questions – the only foolish question is the one not asked.

Note: It is Mountaineers policy that alcohol and controlled substances may not be used before or during club trips and field trips.

### Graduation Requirements

Intermediate Snowshoeing students can attain the graduation badge by successfully completing a minimum of three (3) snowshoeing trips, two of which must be rated Intermediate, hold a current Mountaineers' Navigation badge, an avalanche awareness badge, and completed a full day of stewardship of your choice by the end of the course (i.e. in 3 years).

A [graduation form](#) must be submitted, listing the student's activity completions of said requirements.



# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## TRIPS

### The Snowshoeing Code

- Leave the trip itinerary with a responsible person.
- Carry necessary clothing, food, and equipment.
- A party of three is a minimum.
- If climbing, rope up for exposed places and glaciers. (Do not attempt without climbing training.)
- Keep the party together.
- Never snowshoe beyond ability and knowledge.
- Never let judgment be overruled by desire when choosing the route or deciding to turn back.
- Follow the precepts of sound mountaineering.
- Behave at all times in a manner that reflects favorably upon snowshoeing, including Leave No Trace.

### Eligible Snowshoeing Trips

Intermediate Snowshoeing students and graduates are eligible to participate in Mountaineers' snowshoeing trips of any rating. Graduates of Alpine Scramble and Climbing Courses may also participate in Intermediate snowshoeing trips.



# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## GEAR

### What to Bring on the Intermediate Snowshoeing Field Trips

Snowshoes, the Ten Essentials and wool or synthetic pile clothing, and an ice axe are required. Gear is not available at the trailhead. You must arrange for your own rentals in advance of a trip. A Gear List can be found near the end of this course guide.

Helmets are required at the field trip as well. If you do not own one, do let us know as we have some extras and can loan it to you.

Avalanche beacon, metal shovel, and avalanche probe is required to practice companion rescue at field trip #1 but if you do not own it, we have some spare gear to loan it for your use.

### What to Bring on a Non-Course Intermediate Snowshoeing Trip

In addition to the gear and clothing one should bring to a Basic snowshoeing trip, the additional gear may be necessary or required by a trip leader. Geography, weather, and avalanche conditions are factors that necessitate additional equipment. Such gear may include ice axe, shovel, avalanche probe, avalanche beacon, or portable traction devices such as crampons, YakTrax, or Microspikes. Trip leaders will note in their activity descriptions and/or follow-up correspondences what additional equipment they expect trip participants to bring. Participants are expected to procure their own items.

### The Ice Axe

An ice axe is essential for snowshoeing trips rated Intermediate. You can also use it for alpine scrambling and mountain climbing.

Get a general-purpose ice axe with a curved head, straight shaft, and a shape comfortable enough to carry in your hand for several hours. The ones with rubber sleeves on the shaft may give you a good grip and insulate from the cold, but they are difficult to pull out of the snow during self-belay. Get covers for the spike and pick to protect you and your snowshoeing buddies when you carry the axe on your pack.

The appropriate ice axe length is determined by a combination of your arm length and your height. To check for the right ice axe length for you, stand in a relaxed position with your arm straight down at your side, holding the axe with your palm flat on top of the head and your fingers wrapped around. The spike should come down to mid-ankle. For most people, that measurement will correspond to a 65 cm or 70 cm axe. Most snowshoers and scramblers find this length most versatile: a longer axe is heavier and more awkward to use as the slope steepens; shorter axes won't support you except on technical terrain. You may want a wrist loop or leash on your axe so you don't lose it. You can make one from 5 feet of narrow nylon webbing or purchase a commercially available leash.

Remember that an ice axe is a sharp "weapon" and can injure you or your partners. Carry it properly and use it with care. You should get a B-rated lightweight ice axe suitable for general mountaineering. Do not buy T-rated technical ice tools. They are for vertical ice. To determine the length, a good guideline is when you hold it and stand relaxed, the spike of the axe should be at your ankle level. Buy spike and pick guards for safety when the axe is lashed to the back of the pack.








## Helmet

The climbing helmet, a standard piece of equipment for climbers and scramblers, is designed to protect your head from falling objects such as rockfall or another climber's falling gear. It is also designed to protect you from the impact of falling on hard surfaces such as rock or ice, which at times are buried below the soft snow.

Although we encourage wearing helmets when using ice axe due to a potential arrest from a slip, helmets are not standard equipment for snowshoers. Due to the nature of ice axe arrest practice, we will be using them for the Intermediate Snowshoeing field trips. If you have your own climbing helmet, please bring it to the field trip. We will also have several on hand to lend to students for the day. Many winter travelers choose to wear a helmet whenever they are using the ice axe.

Your helmet must be UIAA or CE approved. Bicycle, kayak, motorcycle, snowboard, or other types of helmets are not acceptable because they are designed to specifications different from ours.




- Fit. It should be snug but not tight. It should fit with a hat under it.
- Headlamp compatibility. Most helmets have clips to secure headlamps.

 <p>Black Diamond Half Dome (Sturdy)</p>	 <p>Black Diamond Vapor (Lightweight)</p>	 <p>Petzl Meteor (Lightweight)</p>
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## Sturdy & Insulated Boots (also used for general mountaineering)

These are not the same as hiking boots; they are much sturdier and have a less flexible sole. Try several brands to find the one that fits you best, and spend lots of time with the fitting. Be fussy and take your time. If they don't feel good in the store, they won't get any better on the trail.

Fit, fit, fit. It is the foremost important thing when you choose a pair of boots. Make sure you wear your climbing socks, put on the boots and a heavy pack, and walk-in them, preferably with ups and downs. Do not wear a new pair of boots on a tough climb. Instead, break-in them on short hikes.

 <p>Asolo Piz GV Mountaineering Boot - Women's</p>	 <p>La Sportiva Trango Cube GTX Mountaineering Boots</p>	 <p>Scarpa Charmoz Mountaineering Boots</p>
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## Gaiters

- They prevent snow from getting into your boots and pants.
- They also protect your pants from crampons on snowshoes. You need to make sure they fit snugly over your boots.
- There is no need for heavy-duty expedition gaiters, but they need to be full-length and waterproof.
- They keep your feet warm as well.

## Avalanche beacon, shovel, and probe

As mentioned earlier, an avalanche beacon is not standard equipment for our intermediate trips. We encourage all in the party to use these three when encountering or traveling in and out of avalanche terrain. When carrying a beacon, shovel, and probe on you, one should ensure all in the group are well versed and understand the use of such gear when in need.

Avalanche beacons, also known as transceivers should not be an old device. The latest in the market are digital beacons that have three antennas to resolve "spikes" and have the ability to "mark" (i.e., suppress) a signal during a multiple burial search.

A shovel should be a metal shovel. On intermediate trips, a metal shovel could not only be carried for avalanche rescue purposes but also enable building emergency shelters and such. So, carrying a few within the whole group doesn't is recommended for the least.

An avalanche probe is quite essential to perform one of the key tasks in finding the buried individual in an avalanche. It also can aid to understand the layers of snow below you when choosing to do emergency shelters and winter camping.

## Crampons

Crampons are not required on many intermediate trips, although there are trips, where the leader will explicitly mention the needs of the crampons. We do not teach these skills in our course. You are encouraged to take scrambling or climbing courses that offer to cover these techniques. If you must, select crampons after buying your boots to be sure they fit well. They may be either step-in or strap-on. Step-in crampons require good welts and rigid soles. Strap-on crampons are more suitable for all kinds of boots and are a good choice for your first pair. Crampons with anti-balling plates are recommended.

Most students prefer aluminum front-point crampons (they are generally lighter even if less durable than steel). Consider renting/borrowing crampons before buying. Bring your boots with you when you buy crampons and make sure they fit your boots. Avoid getting aggressive technical crampons that are suitable for water ice climbing.

- How many points? Either 10 or 12 will work, as long as there are 2 front points.
- Aluminum or steel? A pair of lightweight aluminum crampons will suffice for most of the trips.
- Antiball plates. They help prevent soft snow sticking to the bottom. Many people love this feature. Not too bad to manage this on summer climbs.
- There are 3 types of bindings: step-in, strap-on and hybrid.
  - Strap-ons can fit almost any boots or shoes, including your running shoes, probably with the exception of sandals. Strap-ons are the most versatile and slightly less rigid.
  - Step-ins require welts on both the front and end of the boots.
  - Hybrids require a heel welt but not the front one.





# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## SKILLS

### Physical Conditioning

As you venture into more difficult terrain on your snowshoes, excellent physical conditioning becomes increasingly important for individual and group safety.

A number of snowshoeing trips, hikes, scrambles, and climbs are aborted each season because someone in the group was out of shape. If anything, we can admit that we do not want this to be our limiting factor when deciding to reach the destination and turning around. Check the requirements and if needed ask the trip leader to understand their fitness needs for a particular trip and check if you meet the criteria before signing up.

In general, you must be fit for the more physically demanding trips to improve your odds of successfully completing more trips as weather and snow conditions permit. Try hiking up Mt. Si (8 miles round-trip; 3550 ft. elevation gain) and see how you do. If you can get to the top of Mt. Si (to the viewpoints in the haystack basin) in 2½ hours or less (barring icy conditions), you are probably in a good condition for this course. If it takes you longer, you need to start a conditioning program today. Remember, the last person on the outing should be the last because they have volunteered or have been asked to be rear guard, not because they can't keep up with the group.

Also, please note that on occasions, we all have bad days when snowshoeing and it is important to mention that to the trip leader as keeping the group together does more good than going to the destination. Do not rush or try catching up to individuals, instead ask them or the leader to reduce the pace a bit and explain the situation to them. No leader wants to leave an individual far behind that they cannot keep an eye on and feel not responsible for their mental well being on the trip.

### Self-Belaying and Arresting Falls

*Pole Self-Belay* - Trekking, hiking, and ski poles are all suitable for snowshoeing if they can be adjusted in length to extend from the elbow down to snow level. Any longer and they will be too long for a quick pole arrest if that is needed. The poles should be fitted with baskets that are large enough to prevent sinking into the snow. The handle end of the pole can be used to probe the snow to detect layering. Both poles used together add substantial stability. They are particularly useful for descending. They are also useful for getting back up on the snowshoes from the snow.

*Pole Self-Arrest* - Poles can be used to arrest a slide. One pole is used. Since the speed of arrest is essential, the other pole is simply left attached to the wrist while that hand grasps the arrest pole below the handle. The lower hand is slid down the pole to the basket where it holds on firmly to dig the tip into the snow or crust. The pole tip anchors the arrest while the snowshoe crampons are dug in to stop the slide.

*Ice Axe Self-Belay* - The ice axe is used on the uphill side on a traverse on harder snow. It is not used with a basket because self belay is much easier if the axe can be plunged down into the snow. This makes for a very secure anchor. The ice axe can be used in many other ways. See *Freedom of the Hills* for more techniques.

*Ice Axe Self-Arrest* - If self-belay is not successful, for instance, a snowshoer is knocked over, the ice axe can be used to arrest a slide. The technique aims at going downhill feet first and face down. If that is not the case in a fall, the first job is to get into that foot-first and face-down position. Once there, the ice axe pick is held firmly into the snow or crust while using your knees to dig in to stop the fall.

Note that the technique for self-arrest while wearing snowshoes or crampons differs slightly from self-arrest while wearing scrambling or mountaineering boots. See the ice axe arrest pages in [Freedom of the Hills](#) for more particulars on arresting with an ice axe. Clearly, the best arrest is the one that is prevented by a good self-belay.

### Navigation

Knowledge of how to read a topographic map and how to properly utilize a compass for off-trail navigation is a critical skill for backcountry snowshoeing, where there is usually no apparent trail to follow. This course also teaches how to use GAIA





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on your phone to navigate. Although the phone batteries on long day trips are less likely to last unless used sparingly, it is a useful skill to have. In order to graduate from the Intermediate snowshoeing course, students are required to hold a current Basic Navigation badge. This is secured by completing the Basic Navigation course (also known as Wilderness Navigation Course) which is offered by the club during the fall or late winter to early spring seasons. The Basic Navigation course requires participation in one evening workshop and one all-day field trip.

After completing the Intermediate Snowshoeing field trips, you are eligible to participate in Intermediate and Strenuous level snowshoe trips as a student. Completion of the Basic Navigation course is not required prior to participation in trips as a student but is a requirement for graduation from the snowshoe course.

### **Trip Planning**

We have recently started offering winter trip planning courses. Lecture #2 runs through an example and talks about how to plan your trip and be ready to communicate your risks and concerns with your trip leader. This factors in weather and avalanche forecast onto the route you intend to take on a map. So, understanding weather and avalanche forecast is an essential skill to have when drafting a plan.

Also, it is important to note that such planning is very useful as every individual has a different risk factor and could choose to do things differently on the same route and on a given day. The more we understand what concerns us and communicate that with the group the better the decision making will be when choosing a way to go up on the snow slopes. Granted we can make a wrong decision but it is better if everyone had discussed and had come to the same decision rather than one leading the team into the unknown.

Every falling snowflake doesn't believe that it is the reason to cause an avalanche, in fact it brings joy to our hearts but an accumulated weight of all snowflakes on a slippery slope can cause an avalanche and injure a person. Consider planning your trips every occasion you get out in the backcountry!



# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## SAFETY

Safety comes in two forms: prevention and response. Incident prevention is part of the Mountaineers ethic. The Snowshoe Code, adapted from the climber's Climbing Code, has long been a part of Mountaineer trips. Prevention is the reason for the emphasis on self belay rather than reliance on self arrest with ice axes. Prevention is the major emphasis in avalanche training where systematic evaluations of terrain conditions are done by everyone on a trip.

Outdoor adventure training usually emphasizes response because it is gear and skills intensive. The assumption is that avoiding incidents is obvious, therefore training needs to focus on response. The trade-off in this approach is that it ignores prevention. Consider the trip leader who begins the trip by stating: "This will be a safe trip." Is this so obvious that it is silly to say it, or will this simple exhortation bring safety, even momentarily, to the top of the mind? If the trip leader gets everyone to fully participate in the trip, for instance by saying that this will be a safe trip and by having everyone get out maps and compasses to establish bearings, safety is then made part of the trip.

### Prevention

It is the responsibility of everyone on a trip. If someone notices an issue, it is Mountaineer tradition to communicate their concerns. In this course, there are opportunities for concern. The backcountry is both welcoming and threatening. That trade-off appeals to what might be primal in us. But the field trip will head uphill; ice axe arrest will be practiced; the weather might be threatening. The field trips and Club trips are a balance of reward and risk. Incident prevention and incident response training are aimed at decreasing risk and increasing reward.

### Check the Weather

The Internet, newspaper weather maps, radio and TV reports are all useful. You should check these resources for the latest information:

Northwest Weather and Avalanche Center:

<http://www.nwac.us>

U.S. National Weather Service:

<http://www.wrh.noaa.gov/sew>

Washington Department of Transportation:

<http://www.wsdot.wa.gov/traffic>

The phenomenon of adiabatic cooling can sometimes provide a rough indication of what temperatures to expect. When an air mass is lifted over a mountain range, it cools due to decreasing pressure; as it descends the other side, it warms. The drop in temperature (dry adiabatic lapse rate) is about 5 degrees for every 1,000 feet. If precipitation accompanies the elevation gain, the lapse rate is about 3 degrees for every 1,000 feet. Thus, if the temperature in Seattle is 45°F and it's raining, the temperature on the summit of Snoqualmie Mountain (6,278 feet) should be about 27°F.

### Wear and Bring Proper Clothing Layers

(See Basic Snowshoe Course Guide)

### Eat and Drink Frequently

(See Basic Snowshoe Course Guide)

Your performance starts to decrease when you lose as little as 2% of your body weight in water. In cold weather, drinking water will help keep you warm. It will increase blood circulation to your extremities. Cold air doesn't hold as much moisture as warm air, so your body will rob itself of water to warm the cold air that you breathe before it gets to your lungs. If you are drinking enough water, your urine will be light-colored. Water carries away metabolic wastes and reduces muscle cramps and soreness. Drink water often. It's okay to eat a little fresh snow for part of your water ration or to fill your half-empty bottle with snow. But consuming too much cold snow will force your body to expend extra fuel to keep your insides warm. If you get water from a stream, be sure to treat the water for giardia by boiling or by using a filter. Iodine is generally ineffective at low temperatures – it takes too long to work.



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## **Take Rest Breaks**

(See Basic Snowshoe Course Guide)

## **Avalanche Awareness**

Enabling you to travel safely in the winter mountains is a prime aim of the Intermediate snowshoeing course. We devote an entire text to the subject of avalanches, since they pose a significant yet manageable threat, with injuries and deaths occurring every year in the Cascades. *Avalanche Essentials* by Bruce Tremper is a recommended text and contains considerable detail on the nature and causes of avalanches and specifically how to reduce your exposure to risk from them. As snowshoers, we are always aiming to avoid exposure to significant avalanche risk, primarily by careful preparation including choice of route and wise decision-making (e.g., whether to go/not go beforehand or to proceed/turn back while on a tour). Tremper's style is very readable and it's definitely the case that the more you know, the better your decision-making will be. There is also a companion field guide for Tremper's book: *Avalanche Pocket Guide - A Field Reference*.

There's nothing that can replace the knowledge and training you would receive through an AIARE Level 1 Avalanche Course. Serious winter adventurers who spend any significant time in the backcountry or in avalanche terrain, whether it be as a snowshoer, skier or otherwise, should take this course.



# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## INCIDENT RESPONSE

### The 7 Steps of Incident Response

The Mountaineers WFA, Wilderness First Aid, program uses as its core foundation the 7 Steps of Accident Response. To expand the focus of the 7 Steps, Intermediate Snowshoeing changes “accident” to “incident”. Not every incident is an accident, some involve acute illness or hypothermia. The 7 Steps framework is most useful because it moves the response from paralysis to action. Here are the original 7 Steps, and modified for the Snowshoe program

01. Take charge of the situation
02. Guard against another incident
03. Render life-saving measures if required
04. Protect from cold
05. Establish the extent of problem or injury
06. Make a plan
07. Carry out the plan

In backcountry snowshoeing, the first four steps are most important. First, someone has to start the process. Then, the rest of the party needs to be kept safe. Immediate aid in the backcountry means maintaining breathing. Protecting the environment means preventing hypothermia.

Experience with the 7 Steps is part of the field trip for this course. For those who have taken the Wilderness First Aid or another Wilderness First Responder course, this is an opportunity to see the seven steps in winter conditions. For those who are yet to take such a course, this makes the steps a familiar part of trip planning. In responding to an incident, everyone on a trip must be part of the solution to the incident. Seeing the 7 Steps in operation prepares everyone on a tour to take part in preventing and responding to incidents.



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## Hypothermia Response

(See the discussion about Hypothermic causes and preventions in Basic Snowshoe Course Guide)

The basic goal of first aid for hypothermia is to prevent further heat loss.

<u>Symptoms of Mild Hypothermia</u> <ul style="list-style-type: none"> <li>● Complaints of cold</li> <li>● Shivering</li> <li>● Difficulty using hands</li> <li>● Core temperature above 90°F (32°C)</li> <li>● Psychological changes, such as withdrawal and apathy</li> </ul>	<u>First aid for Mild Hypothermia</u> <ul style="list-style-type: none"> <li>● Get the patient out of the cold and wet</li> <li>● Replace wet clothes with dry; add insulation to clothing</li> <li>● Place the patient in a warm environment</li> <li>● Offer warm liquids or food if the patient is conscious and able to swallow easily. Rehydration is dramatically effective in treating mild hypothermia. Dehydration is a strong contributing cause of hypothermia.</li> </ul>
<u>Symptoms of Moderate to Severe Hypothermia</u> <ul style="list-style-type: none"> <li>● Lethargy, mental confusion</li> <li>● Refusal to recognize the problem</li> <li>● Uncontrollable shivering</li> <li>● Slurred speech</li> <li>● Stumbling</li> <li>● Core temperature 90°F (32°C) or lower</li> </ul> <u>Indications of more severe illness</u> <ul style="list-style-type: none"> <li>● Unresponsiveness</li> <li>● Decreased pulse and respiration</li> <li>● Cessation of shivering</li> <li>● Physical collapse</li> </ul>	<u>First aid if the patient <i>will be</i> evacuated promptly</u> <ul style="list-style-type: none"> <li>● End exposure; cover the patient, rather than walking him or her to shelter</li> <li>● Treat the patient very gently; move them as little as possible</li> <li>● Replace wet clothing with dry; cut off clothing to prevent unnecessary movement</li> <li>● Check the patient for other injuries</li> <li>● Evacuate the patient</li> </ul> <u>First aid if the patient <i>will not be</i> evacuated promptly</u> <ul style="list-style-type: none"> <li>● Begin active rewarming. Concentrate on delivering warmth to the head, neck, armpits, and groin areas; heat will most easily reach the core of the body from these regions. Apply hot water bottles (wrapped in a layer of cloth), warmed blankets, or another warm body.</li> <li>● Watch the patient for signs of shock</li> <li>● Evacuate as soon as possible</li> </ul>

A hypothermia patient without pulse and respiration may be revived. No patient should be considered dead until after warming. "No one is dead until warm and dead."

## Frostbite

(See discussion about frostbite causes and preventions in Basic Snowshoe Course Guide)

<u>Symptoms of Superficial Frostbite</u> <ul style="list-style-type: none"> <li>● Skin is pale, dull or waxy and firm to touch</li> <li>● Deeper tissues remain soft</li> <li>● May feel pain in the area and may feel intensely cold or numb</li> </ul>	<u>First aid for superficial frostbite</u> <ul style="list-style-type: none"> <li>● Warm a cold body part by placing it against a warm body part and applying a firm, steady pressure</li> <li>● Tuck hands into armpits</li> <li>● Do not rub the frostbitten area (rubbing will damage the skin)</li> </ul>
<u>Deep Frostbite</u> <ul style="list-style-type: none"> <li>● Skin is pale, dull or waxy</li> <li>● Deeper tissues, as well as the skin, are hard</li> <li>● Joint movement may be limited or absent</li> <li>● The affected part will be painful at first and then become numb and senseless</li> <li>● Parts of the patient's legs and arms may be affected, as well as the hands and feet</li> </ul>	<u>First aid for deep frostbite</u> <ul style="list-style-type: none"> <li>● If the patient is hypothermic, treat that first because it's life-threatening</li> <li>● Keep the frozen part frozen</li> <li>● Do not rub the frozen area</li> <li>● Don't let a thawed part refreeze or bear weight</li> <li>● Evacuate as soon as possible</li> <li>● Don't attempt thawing if the victim can be transported to a hospital within a reasonable time</li> </ul>





## SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

Deep frostbite is a serious problem that can result in the loss of tissue or an entire body part. If tissue loss is to be minimized, it's essential to recognize deep frostbite early and to prevent any further injury, which may result from infection, trauma or allowing the part to thaw and refreeze. Once a frozen part has thawed, the patient may become a stretcher case because the affected part will be extremely painful. Traveling on a thawed foot will be almost impossible.

NOTE: Thawing should be undertaken only if refreezing will not take place and the part can be kept under sterile conditions. This will be almost impossible to maintain in the field. Do not start thawing until the patient is sheltered and will not have to assist in the process. To thaw a frozen part, immerse it in a warm 104°F (40°C) to 108°F (42°C) bath kept at a constant temperature by adding warmed water. A thermometer is essential for monitoring the water temperature.

Continue thawing until the affected part is completely thawed -- it should have a red or pink undertone or appear normal all the way to the end of the toes or fingers. If the pink color does not return to the limb in a reasonable time, remove it from the bath. Encourage exercise of thawed toes or fingers during and after thawing. Once thawed, place the part on a sterile pad and put small pieces of sterile gauze between toes and fingers. Protect the thawed part from any further damage, including rubbing by a sheet or blanket. Don't use hot water bottles or place the affected part near a hot stove or fire. Don't disturb blisters. Take the patient to the hospital as soon as possible.

### **Avalanche Rescue and Beacon Search**

If the worst should happen, then you need at least an introduction to some basic principles of avalanche rescue. However, simply carrying avalanche beacons and having some idea of rescue methods is not a reason to be gung-ho with regard to the risk from avalanches. As snowshoers, we're aiming to minimize the risk.

### **Emergency Winter Camping and Survival**

Winter camping and survival require further refinement in skills and preparation as compared with camping during other times of the year. In winter camping or survival situations, you must be prepared to endure severe weather and be prepared to stay out overnight. You may have planned such an overnight trip intentionally or you may be forced to stay out overnight because of weather or due to the need to help an injured or ill party member. You should have the equipment and skills to survive an overnight stay in severe weather. Remember that a temperate, sunny winter day in Seattle offers no assurance of pleasant overnight weather up in the mountains.

The first principle of survival is to avoid situations in which the survival issue arises. Physical conditioning, trip planning, route finding, navigation, competent leadership, and adequate equipment all can help you to avoid ending up in a survival situation. Then an unplanned night in the cold may be necessary only when it's required in order to help out some other injured or less fortunate person.

Freedom includes a good introduction to both emergency snow shelters (for the unplanned case) and snow camping in general, covering the construction of snow caves and igloos., which are taught in a separate course - Winter Camping.



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## APPENDIX 1. SNOW TRAVEL SKILLS RESOURCES

These videos demonstrate a variety of snow travel skills relevant to backcountry travel.

### **Walking in balance and ice axe techniques**

Winter skills 1.9 traveling in the winter hills (BMC)

[https://m.youtube.com/watch?feature=youtu.be&v=\\_BtjChY2R0s](https://m.youtube.com/watch?feature=youtu.be&v=_BtjChY2R0s)

Kicking steps in snow (Glenmore Lodge)

<https://www.youtube.com/embed/qa0MpRlcSFM>

Ice axe self belay (Glenmore Lodge)

<https://youtu.be/U8a8qhXoi0s>

2.5 ice axe arrest (BMC)

<https://m.youtube.com/watch?v=QN58FtFy7dU>

Ice axe arrest (Glenmore Lodge)

<https://youtu.be/94QFI mj dEAo>

Cutting steps with an ice axe (Glenmore Lodge)

<https://youtu.be/UUZ4u1Wtjw>

Cutting a stance in the snow (Glenmore Lodge)

<https://youtu.be/-mL-xS5Vye4>

How to carry ice axe (BMC)

<http://tv.thebmc.co.uk/videos/winter-skills-how-to-carry-an-ice-axe/>

Using crampons (Glenmore Lodge)

[https://youtu.be/NQ\\_WsqrP6us](https://youtu.be/NQ_WsqrP6us)

### **Avalanche Safety**

Measuring slope angle

[https://youtu.be/vCiJma\\_rpA](https://youtu.be/vCiJma_rpA)

Terrain traps

<https://www.youtube.com/watch?v=7gEw8DUOw80>

The system

<https://youtu.be/Xu9IIUOdREs>

A variety of snow pit tests

<https://vimeo.com/79904128>

The Avalanche Terrain Exposure Scale (ATES)

<https://youtu.be/RhZwntYWTkk>



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## APPENDIX 2. FIELD TRIP GEAR LIST

### Ten Essentials:

Map (provided to you), compass, sunglasses and sunscreen, extra clothing, emergency shelter, headlamp/flashlight, first-aid supplies, fire starter, matches, knife, extra food & water. Sun protection is a must. Snow reflection is highly damaging to the eyes; UV damage and sunburns are common.

### Clothing & Equipment:

- Pack (large enough for all winter gear and capable to strap snowshoes)
- Snowshoes
- Sturdy, lug-soled, waterproofed boots
- Ice axe (for general mountaineering; properly sized)
- Helmet
- Clothing Layers (no cotton)

#### Inner Layer:

- Wicking Liner socks, 2 pairs (one pair worn, other pair carried)
- Synthetic Warm Underwear, top & bottom, 2 sets (one set worn, other set carried)
- Liner gloves, (+ extra set in a pack)

#### Insulating Layer:

- Outer socks, 2 pairs (one pair worn, other pair carried)
- Pants, synthetic fleece, or wool. Soft-shell or sturdy hiking pants suffice for many.
- Shirt or sweater, synthetic fleece or wool
- Mittens or gloves, 2 pairs (one pair worn, other pair carried)

#### Protective Layer:

- Rain parka with hood – waterproof & breathable preferred to avoid trapped moisture.
- Rain pants – waterproof & breathable preferred to avoid trapped moisture.
- Long gaiters. Be sure they fit your boots correctly so that snow doesn't crawl underneath. GoreTex or insulated gaiters are not necessary.
- Hats (one for warmth; one for sun protection)
- Wind jacket (which may be your rain parka). A fleece or wind stopper vest is also handy if it is warm.
- Scarf or neck gaiter if you tend to get cold easily.

### Additional Recommended Equipment/Supplies for the Field Trip:

- Ski Poles/Trekking poles with baskets (highly recommended)
- Foam sit pad
- Hand and toe warmers
- Toilet paper, sealable plastic bags, and hand sanitizer
- Pack cover
- Dry clothes and shoes in your car for the trip home
- Garbage bags in your car for wet gear
- Camera and extra batteries, if desired



# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## APPENDIX 3. WINTER DRIVING TECHNIQUES

(This is an addendum to the Winter Driving Techniques section in the Basic Snowshoe Course Guide)

### A Few Basic Principles

The most important rule is to avoid sudden changes in motion that could cause you to skid. Be very gentle and easy on the brake, clutch, gas pedal, and steering wheel. Everything you do should be calm, slow, and deliberate. Unless you have ABS brakes on your car, it's best to lightly pump your brakes to decelerate – don't slam down on them! Imagine that there is an egg under the pedal and you don't want to break it. If you have a manual transmission, a better way to control your speed when you're going downhill is to downshift. Of course, you have to be careful about letting the clutch out too fast or it could send you into a skid. Automatic transmissions have a low range that also can keep the car from accelerating too rapidly. Just be sure to shift to "Low" before you get going too fast. Keep in mind that, in some extreme conditions, just taking your foot off the accelerator too abruptly may be enough to cause you to skid.

Accelerating also should be accomplished in a slow calm way. Remember that speed geometrically increases your chances of getting out of control. Another way to visualize proper driving technique in winter is to imagine that you're moving underwater, where all your actions are slowed down.

If you're beginning to skid, don't panic! Remember to gradually turn your steering wheel in the same direction that the rear of the car is skidding. Don't oversteer – just bring the car back to a straight position. Too much steering will send the car careening in the other direction and the car could begin to fishtail down the road.

### Preventing Accidents

So you've got your car under control. What do you do to prevent an accident with someone who's operating under the misguided theory that the faster he goes the sooner he'll be out of this mess? You practice defensive driving to the utmost degree.

Keep an eye on the cars around you. Signal your own intentions well in advance of your actions. If someone is approaching you rapidly from behind, give them plenty of room. If someone is attempting to pass you, slow down so that they can get by more quickly. If you encounter someone ahead of you who is going more slowly than you, reduce your speed gradually and well before you reach him. If you think another car may not have seen you or is turning into you, use your horn to draw his attention. If visibility is at all in doubt, turn on your headlights. (Some states require that headlights be on anytime your windshield wipers are on. Many safety-conscious drivers routinely turn on their headlights whenever they're on two-lane roads to increase visibility – even in the daytime.)

Try to plan ahead. Be prepared if the person ahead of you suddenly goes into a spin. What will you do? If you've allowed adequate distance between you and the other car, you can begin to slow down and take evasive action gradually. If not, you'd better have an alternate "escape route" planned. A few situations warrant special attention. Changing lanes can be tricky on snow because you may have to cross a snow berm to get into the next lane. Lighter cars and cars with smaller wheels can have problems crossing the bump. Of course, be sure to use your signals well in advance of such a maneuver so that traffic behind you knows what you're up to.

Just as you should slow down (using your brakes or your gears) when you're going downhill since the force of gravity will reduce your ability to stop, you should go slightly faster uphill to give yourself better traction and control over your car. Slow down prior to curves in the road, as it is practically impossible both to turn and to slow down on ice once you're actually in the turn. Be aware that driving on bridges or in shady spots (such as under bridges) may be icy when the rest of the road is not.

### Concluding Thoughts

Snow-covered roads are sometimes the only way to get out to the snow-covered mountains for an adventure in gorgeous terrain. But winter driving doesn't have to be an experience that you approach with fear and loathing. Preparation is the key. Knowing how to react to inclement driving conditions and having the right emergency equipment can give you the confidence to make the driving itself a stress-free experience. So practice the skills, keep the right equipment in the car (Basic Snowshoe Course Guide, p. 17) and get out there and enjoy the mountains in winter!



# SEATTLE MOUNTAINEERS INTERMEDIATE SNOWSHOEING COURSE

## APPENDIX 4. REFERENCES AND ADDITIONAL READING

This list includes references from the syllabus text as well as recommendations for further reading.

Mountaineering: The Freedom of the Hills, 9th Edition. - Most commonly used textbook in the mountain-oriented courses offered at the Mountaineers, including Snowshoe, Alpine Scrambling, and Climbing. It is referenced in course materials across activities and is recommended as the one General Purpose mountaineering reference book to have.

### Avalanche and First Aid

- Backcountry Avalanche Safety: Skiers, Climbers, Boarders and Snowshoers, Fourth Edition. Tony Daffern. Calgary: Rocky Mountain Books, 2017.
- Mountaineering First Aid: A Guide to Accident Response and First Aid Care, 5th Edition. Jan Carline, Ph.D., Steve MacDonald, M.P.H., Ph.D., Martha Lentz, R.N., Ph.D. Mountaineers Books, 2004.
- Snow Sense: A Guide to Evaluating Snow Avalanche Hazard, Fifth Edition. Jill A. Fredston, Doug Fesler, and Douglas S., Fesler. Anchorage: Alaska Mountain Safety Center, 2017.
- The Avalanche Handbook, 3rd Edition. David McClung and Peter Schaerer. Seattle: The Mountaineers, 2006.
- Staying Alive In Avalanche Terrain, 3rd Ed. Bruce Tremper. Mountaineers Books, 2018.
- Avalanche Essentials, Bruce Tremper. Mountaineers Books
- Avalanche Pocket Guide - A Field Reference, Bruce Tremper. Mountaineers Books
- Medicine For Mountaineering: & Other Wilderness Activities, 6th Edition. Edited by: James A. Wilkerson, M.D. Mountaineers Books, 2010.

### Navigation

- GPS Made Easy: Using Global Positioning Systems in the Outdoors, 5th Edition. Lawrence Letham. Seattle: The Mountaineers, 2008.
- Staying Found: The Complete Map & Compass Handbook, 3rd Edition. June Fleming. Seattle: The Mountaineers, 2001.
- Wilderness Navigation: Finding Your Way Using Map, Compass, Altimeter & GPS. 3rd Edition. Bob Burns and Mike Burns. Seattle: The Mountaineers, 2015.

### Snowshoeing Techniques

- Snowshoeing: From Novice to Master, 5th Edition. Gene Prater. Seattle: The Mountaineers, 2002.

### Survival

- AMC Guide to Winter Hiking and Camping: Everything You Need to Plan Your Next Cold-Weather Adventure. Lucas St Clair and Yemaya Maurer. Boston: Appalachian Mountain Club Books, 2008.

### Weather

- Mountain Weather: Backcountry Forecasting for Hikers, Campers, Climbers, Skiers, Snowboarders, Jeff Renner. Seattle: The Mountaineers, 2005.

### Winter Health & Conditioning

- Hypothermia, Frostbite, and Other Cold Injuries: Prevention, Survival, Rescue, and Treatment, 2nd Edition. James A. Wilkerson (Editor), Gordon Giesbrecht. Seattle: The Mountaineers, 2006.
- Uphill Athlete