

Winter Mountaineering School

Equipment & Preparation for Cold Weather Mountaineering

Sponsored by the Adirondack Mountain Club



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Welcome to Winter Mountaineering School! This booklet contains information to be used in preparing for Winter School. It is organized as follows:

- I. General Information
- II. Training and Conditioning
- III. Equipment
 - A. Equipment Checklist
 - B. Equipment Discussion
- IV. Food Discussion
- V. Conclusions
- VI. Selected Reading/Resources

Please study this guide carefully, noting that the Equipment List contains certain items that are REQUIRED. This booklet has been prepared especially for Winter School, but is neither a comprehensive text nor a substitute for experience. Individual hiking group leaders may send out supplementary information to clarify the requirements for particular hiking/backpacking groups.

This booklet has evolved over the years to provide good information to Winter School participants. Your comments will help us to improve this booklet and are welcome. The best way to contact us is via email. For program issues send an email to programinfo@winterschool.org. For gear questions use techinfo@winterschool.org.

The ADK Winter Mountaineering School website is www.winterschool.org.

With thanks to all the past and present staff who provided technical and literary suggestions.

Cover Photo: Winter Mountaineering School group approaching treeline on Algonquin, February 15, 2004.

Last update: November 4th, 2008. ERPD

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I. GENERAL INFORMATION

Purpose:

The Adirondack Mountain Club has sponsored Winter Mountaineering School for over 50 years. Our purpose is to promote and teach safe winter mountaineering and camping techniques. The curriculum includes, but is not limited to, hydration and nutrition, winter ascent techniques, efficient gear use, route finding/navigation, and risk management. We attempt to spend the majority of the time in the woods learning, practicing, and applying these techniques. Activities in many of the groups will include non-technical ascents of major peaks. Upon completion of the program, each participant will have been exposed to a wide range of complementary skills that allow safe travel and recreating in the best and worst northeastern winter conditions.

Feedback from previous programs indicates that participants react most favorably when techniques are presented as part of a “learn by doing” approach. Our curriculum is based upon this principle. The overall intent is to get the participants out in the mountains where they can observe and interact with our staff of friendly winter veterans.

Staff:

The Winter School Staff consists entirely of volunteers. Many started out by attending Winter School as students themselves. While our volunteers are from varied geographical locations and occupational backgrounds, each member comes to us with a solid base of winter mountaineering experience. Over the years we have become a great group of high quality mountaineers who are also excellent teachers. These men and women are a fantastic information resource prior to, during, and after the session. Take advantage!

Participants:

Participants must make every effort to be fully prepared for the program. Past experience shows that participants best equipped to learn are those who are in excellent aerobic condition. If you have any doubt about your ability to either run 5 miles or hike 10 miles over hilly terrain and feel good the following day, you need to improve your stamina. It is not realistic to believe that your participation in the school will “whip you into shape”. The demands made upon the body by the cold and necessarily strenuous activity are constant during the session. Poorly conditioned participants lose muscular reserves each day, and become prime candidates for serious injury. Participants who have difficulty keeping up with their assigned group will be shifted to a less strenuous group for the safety of the participants. Remember: the hiking party goes as fast as its slowest member.

Due to the nature of the program and the conditions under which it is run, all participants must be prepared for both physical and psychological challenges.

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If, after reading this booklet, there is any question as to your suitability for the group you have selected (or have been placed into), PLEASE contact the program director (programinfo@winterschool.org). Be honest with yourself and with us.

FOR YOUR COMFORT AND SAFETY, IF YOU ARRIVE AT WINTER SCHOOL IN POOR PHYSICAL CONDITION OR WITH INADEQUATE OR UNACCEPTABLE EQUIPMENT, THE ALTERNATIVES WILL BE TO EITHER PURCHASE/RENT EQUIPMENT (IF POSSIBLE) OR BE EXCLUDED FROM PARTICIPATION IN PORTIONS OF THE PROGRAM'S ACTIVITIES. IN THE PAST, PARTICIPANTS HAVE BEEN WALKED OUT OF THE WOODS AND SENT HOME IF SEVERELY UNDEREQUIPPED. YOUR SAFETY AND THE SAFETY OF THE GROUP IS TAKEN VERY SERIOUSLY BY OUR INSTRUCTORS.

We don't wish to appear hard-nosed about this, but some people exhibit unbelievable "creativity" in assembling or not assembling their equipment. Your performance and enjoyment, and that of the group, hinges on everyone having their act together. Thanks in advance!

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II. TRAINING AND CONDITIONING

Everybody who participates in Winter School wishes they were in better physical shape. No matter how strong you are, the mountains are tougher. Winter hiking/backpacking is always going to be both physical and psychologically challenging. That is part of why it is so much fun!

Many participants arrive questioning whether they will be able to keep up. Prior experience has shown that those who conscientiously follow a training program and have ventured out on a cool weather hike to test their boots and equipment prior to the school are generally more fit and self-confident. This helps them maintain a positive attitude and increases their enjoyment.

The well-conditioned winter hiker/backpacker concentrates on the long-term development of both leg/back strength AND cardiovascular capacity. Since most participants sign up for Winter School a month or so before the session, time is not available to begin and see results from a comprehensive fitness program. In the short run, the most beneficial gains can be realized by devoting available training time to cardiovascular improvement rather than to a crash strength-building program.

Suggested Activities to Improve Cardiovascular Output:

Hiking/Backpacking: the best way to train for a backpack is to go out and do it. Choose an area with some good hills/mountains. If you cannot get to the mountains – pack your pack and hit the stairs! Building muscle memory is key to a good platform for fitness.

Aerobic Fitness Classes: Be sure to attend a class that leaves you sweaty and tired at the end. Choosing a class that doesn't get your heart working is a waste of valuable time.

Running: Excellent aerobic exercise. Do some hills. Dig out your old set of "Heavy Hands" and run with them.

Cross Country Skiing/Snowshoeing: If snow conditions prior to the school permit, this is obviously an appropriate kind of exercise for what we will be doing. Try to include hill climbing and carry a little (or a lot) of weight in a daypack.

Bicycling: Also good aerobic exercise, and easier on the knees than running. You can improve the quality of your workout by choosing a hilly course and by getting up off the saddle for the uphill. If you stand up on the pedals to climb hills, you will more effectively stress the quadriceps muscles. Standing is also more aerobically intense than climbing in the saddle.

Stair Machines: Another excellent way to humble yourself, as well as get a fine workout for mountaineering. If the machine is so equipped, choose a level of exercise so that you can stay on for about a ½ an hour.

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The absolute number of miles, hills, repetitions, minutes, etc. should vary according to the terrain and the individual. The key is that for you to set your training level so you feel you have really accomplished something.

It is unrealistic to expect that all staff and participants have the time to follow a daily exercise regimen. Improvement will be evident with a logical program that gets your heart rate elevated 3 or 4 times per week for $\frac{1}{2}$ or $\frac{3}{4}$ of an hour. Remember, however, that less intense, more infrequent or shorter duration training sessions produce only marginal increases in athletic performance.

It is always wise to speak with an experienced professional or doctor before beginning any exercise program. This is particularly true if you have any outstanding medical conditions.

Physical expectations will vary with the hiking/backpacking group you have chosen. Our goal is to provide each participant with a physically challenging program of climbing and backpacking. To accomplish this, the staff may find it necessary to divide up activities to accommodate individuals with different fitness levels. Due to the small group sizes however, many times that will not be possible and sometimes the pace will seem difficult for participants who are not in shape.

The key point is to **START SOME KIND OF TRAINING PROGRAM NOW!** Five days of hard running the week before the Winter Mountaineering School will do essentially nothing for your overall fitness, and it may cause injury. But a steady and thoughtful exercise program over the period of a couple of months can have substantial benefits.

Put down this booklet and go for a run or a ride, preferably outside!

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III. EQUIPMENT

This chapter covers:

- A. The Equipment Checklist
- B. Discussion of Equipment Items

A. EQUIPMENT CHECKLIST

INDIVIDUAL GEAR - DAY HIKING GROUPS

You **MUST** have the following items (or alternates approved by someone on the staff).

- Pack: internal or external frame; minimum capacity 2500 cubic inches (be sure snowshoes & crampons can be affixed to pack prior to WMS)
- Lashing straps and/or bungee cords (to affix snowshoes to pack)
- Rain cover for pack
- Snowshoes with crampons
- Full (10 or 12 point) crampons
- General mountaineering ice axe with protectors
- Boots – see discussion
- Socks (2 pair liners and 2 pair insulating)
- Vapor barrier socks (1 pair strongly recommended for day trips, mandatory for backpacking; see discussion)
- Tall gaiters
- Long underwear (1 top and 1 bottom); synthetic or wool
- Wind/rain gear (jacket and pants)
- Fleece jacket or wool sweater
- Fleece, wool or synthetic-fill pants (full side zippers recommended)
- Down or synthetic-fill parka with hood
- Mitten shells, mittens and 2 pairs of glove liners
- Fleece or wool hat
- Balaclava
- Face mask
- Ski goggles
- Lip balm and sunscreen
- Headlamp with fresh batteries & backup batteries
- 2-3 wide-mouth 1 quart water bottles (hydration bladders, even if insulated, are not acceptable)
- Insulated holders for water bottles (and method of affixing one of the holders to exterior of pack, so it is accessible without removing pack)
- Matches/lighters in waterproofed cases
- Pocket knife
- Map
- Compass (auto-declining)
- Closed-cell foam “shortie” pad to sit on and for emergency use (approximately 20” x 12”)
- Plastic whistle and strap to tie around neck
- Paper and pencil
- Hand Sanitizer
- Sunglasses
- 50' thin nylon cord
- All sections are responsible for your own trail food

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GROUP GEAR – DAY HIKING GROUPS

The following items are required to be carried by all day hiking groups. Please bring them if you have them.

- Sleeping bag rated to –20° F and waterproof stuff sack
- Stove
- Fuel bottles
- Covered pot for boiling water
- Emergency shelter (e.g., Zardsky Sack or bivy sack)
- First aid kit
- Full length foam pad
- Repair kit

INDIVIDUAL GEAR - BACKPACKING GROUPS (WEEKEND AND COMBO)

You **MUST** have the all of the individual items for day trips, in addition to all of the following items or alternates approved by someone on the staff.

- Pack: internal or external frame, minimum capacity 5500 cubic inches (see pack discussion for more information)
- Sleeping bag rated to –20° F and waterproof stuff sack
- Insulated sack/container to keep hot food warm
- Spoon and insulated mug
- Two closed-cell sleeping pads: 1” total under torso (one can be a self-inflating pad, but not both, and one must be full body length)
- 2 liters white gas in fuel bottles
- Food for duration of trip, including extra dinner for emergencies
- Stuff sack for hanging food
- Toilet paper, tampons

GROUP GEAR - BACKPACKING GROUPS (WEEKEND AND COMBO)

These items are **NOT** required, but please bring them if you have them. If past experience is correct, there will be enough to share. A staff person may contact you to coordinate shared gear to make sure there are no shortages the day of the camp.

- 3 or 4-season tent (the less mesh in the ceiling the better)
- Snow stakes
- Groundsheet
- Light rope to hang food
- Stove
- Windscreen for stove
- Spare stove parts
- Collapsible water bucket
- Insulated platform for stove (e.g., small closed-cell foam pad)
- Pots (2 quart or larger), lid, handle/gripper
- Tarp and cords to protect cooking area from rain

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OPTIONAL GEAR

The following individual items are NOT required, but may be highly desirable, depending on the trip and your perspective. This list is by no means exhaustive.

- Underwear/briefs/bra
- Summit pack
- Insulated booties
- Snow shovel (lightweight)
- Vapor barrier sleeping bag liner (recommended for down bags)
- Trekking or ski poles (recommended)
- Personal items
- Toothbrush
- Other clothing items
- Earplugs
- Extra plastic bags (many sizes)
- Thermos
- Tiny whisk broom
- Spare eyeglasses in sturdy case
- Water purifying tablets
- Candle lantern
- Altimeter
- Camera/film
- Climbing Rope

B. EQUIPMENT DISCUSSION

This section contains some thoughts and reasons for the Winter Mountaineering School's equipment requirements. Winter mountaineering places severe demands on equipment, and certain basics are viewed as critical for safe travel in the northeastern woods.

A few general points are in order:

- 1) Be sure to review the equipment list and discussion carefully. Part of the check in process involves a requirement to unload your pack, spread out your gear, and have it carefully inspected by a team of our instructors. If you arrive with insufficient gear, you will need to attempt to purchase or rent it on short notice, or possibly not be able to participate in the section that you signed up for.
- 2) If you have any gear questions, send us an email at techinfo@winterschool.org.
- 3) Cotton clothing is a huge NO! There is virtually no place whatsoever at Winter Mountaineering School for anything made with cotton. Cotton has an unacceptably long drying time for our purposes. Synthetic materials such as polypropylene, nylon, etc. dry much more quickly, thus saving precious body heat. Your wardrobe for Winter Mountaineering School should exhibit a total absence of cotton. No exceptions.
- 4) You will be amazed at the number of similar items such as fuel bottles, stoves, crampons and the like which you will see. We suggest marking all of your equipment for easy identification.

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- 5) Zippers and cold weather do not always get along well. You would be wise to spray all zippers with a light coating of silicone prior to camp. This will help prevent them from icing up. Also, take the time to put a zipper pull loop or tag on each one so you can grab it while wearing mittens.

REQUIRED GEAR

Pack:

Winter mountaineering demands greater strength and volume than available from many summer backpacks. High capacity internal or external frame packs have proven themselves in winter mountaineering situations. For daypacks, the absolute minimum size is 2,500 cubic inches, and you must have a way to strap on snowshoes and other gear. The bare minimum capacity for an overnight winter pack is around 5,500 cubic inches, and many instructors use packs of 7,000 cubic inches or larger. Most participants wish they had more capacity when they start putting all their gear into the pack. You should expect your pack to weigh between 50 and 70 pounds depending upon your size and goals of the group. A pack weighing more than 80 pounds is a sign of poor preparation, extreme caution or reliance on old equipment that works fine but weighs a lot. Day hiking groups will usually be able to carry packs weighing less than 30 pounds. You need to have a pack large enough to carry your excess clothing if you get warm and to carry your share of group gear.

Please fit your pack carefully and try it out with all your winter gear prior to the beginning of Winter School. As you would do in the summer, make sure the pack is balanced well. Snowshoeing with a heavy pack is challenging enough as it is. If you don't have a large enough pack, one alternative to purchasing a larger one is to put the excess in add-on pouches or stuff sacks that can be strapped on if your existing pack/pack frame permits it.

Lashing Straps or bungee cords:

These are used to attach gear to the outside of your pack. Extra bungee cords are also needed to strap on snowshoes and ice axes and perhaps crampons. Things that have to come off the pack periodically during the day like snowshoes are best held by bungee cords, which are easy to work with, especially with mittens on. Using straps require a little more delicate handling, but they are fine for items such as sleeping bags and tents. Except for an emergency they won't be used during the day and straps hold more firmly to the pack/frame and are less likely to have a bounce.

Pack Rain Cover:

This is required to keep your gear dry. We HIGHLY suggest you line each stuff sack with a plastic trash bag as well. A little extra insurance on keeping the sleeping bag or other items dry is always nice to have. Make sure your rain cover will fit over the pack with all the extra items you will have to strap on to the outside. Many will not and you may need to have a custom rain cover made for you. It has rained during Winter Mountaineering School before and usually the temperature drops again after that warm spell. Almost anything that has gotten wet will freeze. That is something you want to avoid happening.

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Snowshoes:

A wide variety of snowshoe shapes have evolved to meet a similar variety of snow conditions and terrain. Unfortunately, many of these designs are inappropriate for northeastern winter mountaineering. We will need snowshoes designed to excel on steep trails. They must be good for kicking steps on high-angle slopes, and for bushwhacking in dense forest growth.

In general, the lightweight metal snowshoes with built-in crampons have proven themselves to have a reasonable combination of the desired characteristics for the northeastern woods. If possible, get the most aggressive of the crampon options available. Long points are best to give traction climbing up steep slopes with heavy packs and in slushy conditions where the snow builds up under the snowshoe. We will be wearing snowshoes most of the time and not worrying about slipping with a heavy pack on is important.

The older bearpaw, modified bearpaw, and beavertail style snowshoes have also proven satisfactory. Those who plan to use wooden shoes should be sure that they have a binding such as a “Howe”, which has a toe piece that folds over the front of your boot to prevent the boot from slipping forward on steep descents. You will also need to fit these snowshoes with crampons, and be sure that all leather bindings are fully waterproofed. If your snowshoes are laced with rawhide webbing, varnish them well before attending Winter School. The same goes for the wooden frames.

Be forewarned that no one size of snowshoe provides full flotation under all circumstances. While various sources suggest sizes of specific models for a given total load, it is a mistake to assume that a larger snowshoe will out-perform a smaller snowshoe of a given type. Most people find that metal-frame snowshoes about 24 to 32 inches long work well for most conditions in the Adirondack high peaks, even if they exceed the weight recommendations of the manufacturer.

If you don't already own snowshoes, it may be better to try and rent some and just observe what other people are using and the pros and cons of various brands and models. After the School you can then make your purchase with a little better background.

It is CRITICAL to fit your boots to the snowshoes prior to attending Winter School. If you are renting them somewhere, make sure you take your winter boots with you for a fitting. Remember, your heavy winter boot must fit THROUGH the toe hole without catching on the webbing.

Boot Crampons:

Full crampons, (along with point protectors or a heavy gauge crampon bag) are an integral part of a complete winter mountaineering system and are required. You will simply not be able to go on most trips without them, since under many conditions the group will not be able to summit unless everyone in the party has crampons.

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The best crampon selections for our purposes are hinged 12-point crampons. All crampons must be equipped with straps or a clip-on attachment system that fits your boots. **CHECK THE FIT OF YOUR CRAMPONS ON YOUR BOOTS BEFORE COMING TO WINTER SCHOOL.** You will be asked to demonstrate that your crampons do indeed fit your boots during the equipment check at our base of operations the first day. Even the most patient staff member will balk at having to help fit crampons at -20°F.

Please make sure you have your crampons in their bag or with point protectors on. For safety reasons, you are required to have the points covered at all times the crampons are not being used. Sometimes people forget how dangerous they are and just bungee cord them on to the back of the pack with the points all facing the face of the person hiking behind them. We wish to avoid that.

Ice Axe:

An ice axe is required as it is an essential tool for the winter mountaineer. Although some will argue that an ice axe is not a strict necessity for most Adirondack peaks, in many situations it is the best tool for the job. As a Winter Mountaineering School, we strive to teach skills that will take our students beyond the Adirondacks if they so desire. We almost always include workshops and practice for proper crampon and ice axe technique in our programs. How much we actually use them on ascents in any given year depend on snow and ice conditions, but you will leave the program with knowledge of, and experience with, basic ice axe and crampon technique.

The sizing of the ice axe is a matter of taste. Ice climbers prefer very short axes (less than 65 cm). Winter hikers and general mountaineers often prefer an axe that reaches the ground when held at your side (70-85 cm). As you may suspect, there is some controversy about this topic. If you prefer to use your axe as a stabilizer while you snowshoe, a longer axe is preferable. If you plan to hike with ski poles or without any other support, then bring a smaller, and lighter axe. For safety reasons it is required that your ice axe be covered with spike and head protectors when you have it strapped to your pack.

Trekking/Ski Poles:

Although not strictly required, trekking or ski poles are very highly recommended, especially for backpacking sections. The use of poles add a great deal of stability and take much of the load off of your knees, making them particularly valuable on long approach hikes under a heavy load. Collapsible poles are recommended because they can be stowed on your pack when not in use.

Bring poles unless you have experience snowshoeing without them while carrying the anticipated load on the terrain your section will be covering.

Sleeping Bag:

One of the most important considerations for the winter mountaineer is the sleeping bag. A good night's sleep is critical to your performance the next day.

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Your bag must be adequate for severe winter conditions. While the amount of insulation necessary for comfort in the cold is a highly subjective matter, we recommend sleeping bags rated to -20° F. Your bag should be large enough so you can sleep comfortably while wearing a layer or two of clothes.

Both goose down and the modern synthetic fills are acceptable for Winter School. Down is the warmest insulator per unit of weight, the most compressible, and the most expensive. It is subject to clumping when damp and total collapse when wet. The synthetics are heavier - requiring 20 to 40% more weight for an equivalent insulating value. When damp, the synthetics retain a substantial portion of their loft, thereby continuing to provide insulation.

Your sleeping bag must be packed in a waterproof stuff sack. Line each sack with a plastic bag before stuffing the item.

Some staff members bring an extra wool sock or wool mitten. On really cold nights, when only your nose sticks out of the sleeping bag, the mitten is laid on your nose and you breathe through it. It provides a little insulation, but more important, it collects some of the moisture that otherwise gets on the sleeping bag. It has to be dried out during the day. To keep your bag as dry as possible you should also avoid breathing into it during the night.

Vapor Barrier Sleeping Bag Liner:

A VBL is strongly recommended for all participants using down bags and optional otherwise. It is simply a large coated nylon bag with a drawstring around the opening. It works on the principle of reducing evaporative heat loss by trapping the hot, moist air near your body. The result is a 10 to 15 degree improvement in the rating of your sleeping bag. You will probably want to sleep in your synthetic long underwear while using the VBL (wet nylon next to the skin is not pleasant).

Owners of down sleeping bags will find it necessary to use their VBL's nightly to keep perspiration from entering the down and reducing its loft. The need for a VBL increases with the length of the trip, as moisture will continue to accumulate in your sleeping bag from day to day.

Sleeping Pad(s):

Most sleeping bag materials compress to negligible thickness under body weight, and insufficient padding will guarantee you a cold night's sleep. Sleeping on snow requires thick insulation. You will need at least 1" of insulation thickness under your torso, and at least 1/2" under your head, legs and feet. The first part of the solution is to bring a full-length pad of closed-cell foam of at least 1/2" thickness. The second part backs this up with another 1/2" thick pad that covers at least the distance from the top of your shoulders to the bottom of your buttocks. This will give you heavy insulation under the major pressure points since they compress against the ground the most. The second pad can be either a closed-cell foam pad or a self-inflating open-cell foam pad (e.g. Thermarest). Most people prefer two full-length pads to minimize the threat of cold feet.

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Please keep in mind that the inflatable pads go flat occasionally, especially when they get to close to an ice axe or set of crampons without point protectors on. This is why one full-length pad must be closed-cell foam. You may wish to bring a patching kit for self-inflating pads.

“Shortie Pad”:

A small piece of closed cell foam pad should be brought along on both day trips and backpack sections. It can serve as seat during breaks and around camp, and several of them can be used together to keep an injured person off of the snow.

Boots:

Our requirements for boots are strict and non-negotiable. In the Adirondacks we may very well have to contend with rain and slushy snow, followed by rapid and drastic drops in temperature. We get many, many questions every year regarding the suitability of various boots for our program. In order to address these We've come up with the following general guidelines - **The Winter Mountaineering School Commandments of Footgear**. Please read carefully and fully.

1. No boot, no matter what the manufacturer's claims, is waterproof when it comes to the varying conditions in the Adirondacks. Frozen boots = frozen feet. Therefore for overnight backpacking sections, removable boot liners are mandatory, no exceptions. Removable liners allow boots to be field dried at best and kept from freezing solid at worst. Also, do not confuse a removable midsole for a removable liner.
2. VBL sock liners (see below for details) are strongly recommended for all sections and are required for over night backpacking sections. They can be difficult to find. In a pinch, a pair of bread loaf bags (2-per foot, per day) will work. Many of us with years of experience have come to realize that even the best of VBLs eventually delaminate and leak so many of us use both the VBL and the bread bags, or two bread bags together. They are worn between your inner and outer socks. They work. Trust us.
3. There has been a great proliferation in "high tech" winter footgear. Many manufacturers are making boots similar to the Columbia Buggaboos. In general they are one-piece construction and lack removable liners. This type of boot is now considered acceptable for our weekend day hiking section only since they can be kept warm overnight and dried while staying at the Loj. In general these should have full lacing, heavy lug type soles, full rubber water proof lowers and may have synthetic or heavily factory water proofed leather uppers. They must also work with your crampons, gators, and snowshoes. When in doubt ask.
4. GI issue mouse boots, i.e. the big white ones that make you look like Mickey Mouse, are still acceptable for our purposes for overnight trips. They are tricky to get to work with most crampons, snow shoes and gators however so try them out first. Many miles were logged with them in the early years of winter school. Or you can use...

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5. Sorel type pack boots. But they must satisfy the first commandment above and have removable liners. They should have full lacing or an appropriately adjustable closure system, heavy rubber lowers with a lug sole, and synthetic or heavily factory waterproofed leather uppers. But most instructors now use....
6. Plastic Mountaineering Boots. These are the most appropriate footgear for our school. They have some drawbacks, not least of which is their cost but overall they work the best for our overnight backpacking sections. They are a bit tricky to fit with crampons, snowshoes, and gators so be sure to check out the fit of this gear before arriving at school. They can be rented at some gear shops, such as EMS in Albany and Lake Placid, and The Mountaineer in Keene Valley.
7. There are, in addition to the boots mentioned here so far, some very sophisticated, very expensive, single leather mountaineering boots available on the market these days. These boots are made for fast, alpine style ascents up mixed routes and are really made for conditions and terrain we do not have much of in the Northeast. Most importantly these boots do not satisfy the first commandment above and so, despite their expensive pedigrees, are not acceptable for our overnight backpacking sections.

The bottom line is that you need to have one pair of boots that are comfortable to walk in and perform well with snowshoes and crampons. It comes down to personal preference and where you want to make tradeoffs – comfort in walking a lot in them (plastic), or boots with less support for snowshoeing and cramponing (pac-boots). Note that without rigid boots it is not a matter of not being able to climb moderate slopes with crampons, but using different technique to avoid popping out of the ice.

Any pac or mouse boot user needs to have a rubber patch kit to repair puncture holes. Puncture holes happen from a misplaced ice axe spike when walking or forgetting that when wearing crampons, you can't put one foot on top of another unconsciously like you are used to without causing serious damage to the boot and sometimes to the foot inside. Everything in the winter has to be done consciously.

It is imperative that your feet be happy living in your boots for the duration of the program. Wear any new boots around home or work for several days to be sure. Don't overlook the tops of the boots chafing your shins. If you are using plastic boots and they don't fit well, take them to a good downhill ski shop. Many of the same techniques used on plastic ski boots can be applied to modify your mountaineering boots.

We realize that purchasing new boots for Winter Mountaineering School can be a serious impediment for many people who would like to attend the program, but we cannot compromise your safety with inadequate boots. Please contact use at techinfo@winterschool.org if you have any questions on boots.

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Insulating Socks:

Experienced hikers almost always use two pair of socks - one thin pair of liner socks and one thick pair of insulating socks. Wool or synthetic blend socks are suggested, with the edge towards synthetic blends since they dry more quickly. **BRING A MINIMUM OF 2 PAIRS OF INSULATING SOCKS**, since they may get wet from perspiration and vapor barrier liner seepage. Plan to dry out wet socks overnight like boot liners, or use spares the next day and dry them out while hiking. You can only dry so much stuff at night.

Don't forget that putting too many socks into boots will cause your feet to be cold because of restricted circulation. Make sure it is not too tight.

Vapor Barrier Liner (VBL) Socks:

VBL socks are critical to keep your insulating socks and boot liners dry. They are required for backpacking sections and strongly recommended on daytrips. The VBL sock is worn over a thin synthetic or silk liner sock and under the insulating sock. The liner sock gets wet from your perspiration, and at the end of the day you will need to remove your liner sock and get you foot into a dry sock to avoid trench foot. The liner sock will either need to be dried or replaced with a fresh one for the next day.

There are several options for VBL socks. The first is to purchase them. If you go this route they **MUST** be factory seam-sealed or seam-sealed by you prior to Winter School. If they are not seam-sealed they will leak and defeat the purpose. At least one manufacturer makes factory seam-sealed VBL socks. They are more expensive but will save you the aggravation of seam-sealing all the corners on VBL socks. Another alternative is waterproof neoprene booties that kayakers wear.

Although factory-made VBL socks work for some, others have had difficulty maintaining waterproof seams or find that they delaminate after a few uses, rendering the VBL socks useless. Another solution is to use heavy-duty plastic bags. You need to use two bags for each foot (one bag used alone will break) and bring extra bags for each day. Many find this method to work the best, with the insulating sock and boot liner remaining bone-dry even after several days of use. You can find suitable bags online (e.g., [5 x 4 x 24 inch bags \(Item number UF10G054024\)](#) from [foodservicedirect.com](#)).

Note that waterproof breathable socks or neoprene booties **ARE NOT** acceptable since water vapor will pass though and get your insulating layers wet, defeating the purpose of VBL socks.

The sock situation is best summarized as follows: a thin liner sock, covered by a VBL, followed by a thick insulating sock.

Gaiters:

Tall gaiters that come up below the knee are required. They add warmth to your feet and keep snow out of your boots. They also help reduce the likelihood of tripping by a crampon point catching in a pant leg. Be sure the gaiters fit easily over your boots. They must be easy to get on and off even when iced up. They will be worn most of the time. "Supergaiters" are acceptable

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(for plastic boots) if attached firmly to your boot. We suggest using a fresh application of an adhesive to attach the rubber rand to your boot shell.

Long Underwear:

One set (top and bottom) of long-sleeved, medium-weight synthetic underwear is required. It is both light in weight, and more importantly, quick drying. Long underwear with ANY COTTON IS NOT ACCEPTABLE.

An acceptable alternative is 100% wool underwear, although it has a longer drying time than synthetic and some people find it itchy.

Most staff members will “live” in their synthetic underwear for the duration of the program. For hiking, they will put on breathable wind pants and jacket over the underwear. If it gets colder or the group stops, a pile jacket or sweater goes on over the underwear, and then the wind jacket. This system of layered garments offers the most flexibility for adjusting to changing activity or temperature.

You may wish to bring more than one set of long underwear if you prefer more frequent changes of clothing or a thicker set for evening wear. Some people who faithfully use a sleeping bag VBL prefer to switch into their dry backup synthetics if their primary set is still damp from the day’s activities before getting into the VBL.

Wind/Rain Gear:

The winter weather in the Adirondacks of NY is among the most challenging to be found anywhere. It may rain, it may sleet, it may blow or it may snow. Temperature changes of 50°F in an 8-hour period have been recorded in the past. During the 1989-90 session it went from -26°F to +42°F rain in 36 hours. The school of 2007/08 was a slushy, muddy hypothermia dodging session. We must be prepared for EVERYTHING. Wind/rain gear consisting of pants and a jacket are required. Ponchos are not allowable since they do not cover well. Rainwear made with PVC plastic or rubberized fabric either rips too easily or is too heavy for our purposes.

Most participants and staff will show up with a waterproof/breathable laminate type jacket and pants/bibs of the same material. Waterproof/breathable laminated fabrics are at best a compromise. They are waterproof and offer some breathability, although no waterproof/breathable laminate jacket breathes as well as an uncoated nylon shell. Nor will they keep you as dry as a rubberized raincoat. Expect to be somewhat moist from either perspiration or from rain seepage. It is the “quick drying” characteristic of the synthetic underwear that allows us to deal with the shortcomings of these fabrics.

If you have noticed that your waterproof/breathable laminated clothing does not repel water as well as it is used to, wash-in treatments are available that may restore the repellency somewhat.

Overpants that have a full zipper up the legs are decidedly better than those without, since you can put them on and remove them without taking off your snowshoes or crampons. Better

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jackets have drawstrings at the waist and hood, and ventilation zippers under the armpits. As you will soon learn, more pockets are better than fewer. Your jacket and pants must be large enough to fit easily over a fleece jacket and pants (or equivalent) without constriction.

The combination of an uncoated nylon wind suit and a separate coated nylon rain suit is also acceptable. It is much more time consuming and difficult to use this method effectively, but you will notice that some staff have decided the extra weight and hassle more than offset by being able to stay cooler when hiking. You have to work a lot harder to keep snow off your clothing to avoid getting it wet, but being overheated while you walk will get you wet as well.

Jacket/Sweater for Warmth:

A fleece jacket or heavy wool sweater is required for times when more insulation is needed while on the trail. This layer of clothing should be of moderate thickness, reasonable warmth and should be simple to put on and take off. Some individuals like to take along an extra fleece top for very cold conditions. If using two fleece tops, they should be roomy enough to be used in combination.

Pants for Warmth:

Warm, insulated pants of some sort are required for wear around camp, and perhaps above treeline or when the group stops on the trail. The best choice is a pair of full side zippered pile/fleece pants that comfortably fit over your underwear and below your wind pants. Wool pants are also acceptable, but are rather difficult to get on or off quickly since you have to remove your snowshoes/crampons/boots to get them over your feet. The “harder” the finish of the wool pants, the better. Fuzzy wool collects a lot more snow.

Insulated Parka:

A big warm parka is quite valuable for evenings and mornings in camp. It is also very helpful in rescue situations. Either down or synthetic fill is acceptable, as long as you realize the characteristics and limitations of each.

Mitts, Liners and Shells:

An effective system for the hands consists of lightweight synthetic liner gloves, heavier synthetic or wool mittens and a nylon mitten shell (preferably with a coated nylon palm and a waterproof/breathable laminate back). Depending on the temperature and the level of activity, you can choose the most comfortable combination. Thin glove liners are very important. Expect to wear a pair for pretty much the entire time. They serve to separate your hand from the cold nylon shell, the ice axe, and are indispensable around camp for working with cold metal stove parts and pots. TWO PAIR are required, since they tend to rip/melt easily.

Pile or heavy wool mittens are the next step for when it is really cold or you are inactive. Pile mitts are preferred since they dry very quickly. If you are bringing wool mitts, TWO PAIR are required.

The nylon gauntlet-style mitten shell is the final layer. This is necessary to prevent wind penetration and snow build-up over the insulating layers.

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Balaclava/Hat:

Warm headgear is an absolute necessity. Fleece or wool balaclavas are the best. A balaclava is decidedly warmer than a hat since it covers your neck as well as part of your face. You lose 30%+ of your body heat through the head and neck. Some people find wool itchy, so try it some at home since you will sleep in it as well as wear it most of the day. Other hat designs are acceptable as long as they are very warm and will remain firmly on your head while you sleep.

Bring both a balaclava and another fleece or wool hat for less extreme conditions. This will also provide a backup in an emergency (e.g., when you briefly take your balaclava off while hiking because you are hot and it accidentally comes out of a pocket or blows away in a high wind).

Face Mask:

Conditions on the summits are often extremely cold and windy, and any exposed flesh can freeze very rapidly. A facemask that covers all skin when combined with goggles is required. Knitted types are generally adequate and inexpensive. Those made of felt, leather, chamois, neoprene, or plastic are usually more windproof.

Goggles and Sunglasses:

Goggles and sunglasses are required. Goggles and sunglasses provide protection from wind and sun. For sunglasses, a hard case of some sort is nice assurance that they will not be crushed when you cram other gear into your pack. Goggles are a critical piece of gear above treeline on cold, windy days. Goggles, mask, and/or balaclava must all work together easily, and you must be able to completely cover all exposed skin. Goggles and eyeglasses (if you wear them) do not get along well. Even if the glasses fit under the goggles, they frequently fog up when you stop on the trail. This presents a problem without a good current solution. Also, many facemasks do not work well with eyeglasses. Contact lenses seem to be a workable alternative, but daily-wear lenses can be very troublesome if they require insertion/removal each day and cleaning solutions that must be kept liquid.

If you cannot see without your glasses/contacts, be sure to carry a spare pair. An eyeglass strap to hold on glasses is also very useful.

Headlamp:

A headlamp is needed for unplanned (or planned) very early departures and very late returns to camp. Also, backpacking groups generally will be cooking dinner and breakfast in the dark. As a side note: flashlights prove incredibly difficult to manage while working a stove, or while performing other camp tasks. For this reason all overnight group participants are required to have a headlamp powered by a LITHIUM BATTERY. Non-Lithium batteries are acceptable provided you have a setup that allows you to keep the battery pack warm under your jacket, or you are using an LED headlamp. IN ALL CASES, BRING SPARE BATTERIES. For non-LED headlamps, also bring a spare bulb. A flashlight is an acceptable alternative for the day hiking groups. As with a headlamp – bring extra batteries and make sure that it works!

Water Bottles:

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WIDE MOUTH, leak-proof plastic bottles are required, since it is almost impossible to pour hot water from a pot into a 1" bottleneck. Two to three quarts/liters total capacity is usually sufficient. Certain individuals may prefer more. Also be sure to bring one or two water bottle "parkas" (a foam insulated holder for a 1 liter bottle) to assure your water doesn't freeze by afternoon. An alternative solution that works most of the time is to put it in a spare wool sock intended for this purpose and put it in your pack upside down.

It is very important to have access to one of your water bottles without having to stop and remove your pack. Frequent drinking is essential in the winter and since we sometimes don't stop very often, people tend not to drink enough. Some hikers carry one bottle next to their body to keep it warm (either hanging around the neck on a sling or in an inner jacket pocket). Others attach their bottle parka(s) to their pack hip belt.

Hydration bladders are not acceptable, even insulated models. The tube will still freeze up when it is very cold.

NOTE: Giardia is alive and well in the Adirondacks. It will be necessary to treat or boil all water from the streams before drinking. Bringing water to a rolling boil is sufficient, and backpacking sections can expect to spend a considerable amount of time boiling water. You may, however, bring along iodine based purification tablets if you so desire. Filters freeze up instantly and become totally useless in winter. The amount suggested under the "fuel" heading has been calculated to allow for the additional boiling.

Utensils:

Each backpacking overnight individual should bring along a spoon and insulated bowl and/or cup. Most people also bring an insulated container in which to rehydrate food. The padded, square stove storage containers work well for this. Plastic is HIGHLY SUGGESTED since metal can freeze to your skin. **BEWARE:** certain plastics are not designed for cold weather use. Please test your prospective cup, spoon, etc., by placing it in your freezer and then immersing it in boiling water. If it cracks, it's history. It is suggested you color code or label utensils for easy identification at group camp kitchens.

Matches/Lighters:

You will need matches or a lighter to get your stove going and for emergency situations. The most reliable solution is to bring clusters of waterproof matches distributed among several waterproof cases. Some folk also bring a disposable butane lighter. These are not as reliable, but if stored separately and pre-warmed in your hand, will most probably work when needed. Emergency "waterproof/windproof" matches should ALWAYS be carried in either case.

Fuel:

Winter School has chosen to standardize on stoves that are fueled by standard camping fuel (Coleman or equivalent). This fuel is widely available, and most all stoves suitable for winter camping can run on it. Your fuel must be carried in leak proof containers. Generally, each participant should bring 2 liters of fuel for a four-night backpacking trip (1 liter for the 2 night weekend backpack section). Many winter mountaineers wrap their fuel bottles with duct tape or

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other tape for identification (with name on it) and to keep their hands from freezing to the cold metal.

Knife:

A simple folding blade knife is fine. Swiss army knives or “leatherman” are favorites. The scissors option is often helpful for cutting Moleskin and other dressings, and the pliers can be useful for various repairs.

Maps:

Maps and guidebooks for the Adirondack are available from the Adirondack Mountain Club (www.adk.org). For off-trail travel, USGS 1:24,000 scale maps are preferable. These can be purchased in paper form from many outdoor stores, and can also be purchased in digital form for use on your computer.

Put all paper maps in a zip-lock plastic bag if you want them to last past the first day.

Compass:

We are now requiring that you bring a compass that is auto-declinating; *unless* you are proficient with the non-declinating type.

Plastic Whistle:

This is helpful for signaling and locating a lost person or being found if you are that lost person, and for communicating on the trail. Wear it around your neck.

Paper and Pencil:

These are important emergency items. Pens are useless since the ink refuses to flow at cold temperatures. Note that paper should be carried in a zip-lock plastic bag.

Repair Kit:

You should be able to repair the equipment you carry. In past years, everything that could break, has. Repair kits frequently include: large safety pins, stiff wire, plastic zip-ties, small pliers, an awl or strong needles, coarse thread, duct tape, etc. A one-foot section of snowshoe webbing and extra clips are also useful. If you are planning to attend with boots that have rubber that seals in the insulation, you must include a rubber inner tube patch kit. A patch kit is also highly recommended if you are counting on an inflatable open cell mattress.

Food:

Food is discussed in a later chapter.

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GROUP GEAR

The items below are not specifically required of each participant. However, if you have access to a good winter tent, stove, etc. PLEASE bring them. The group will get together, talk about the gear, and choose the best group equipment to be shared during School.

Tent:

Most modern dome, tunnel, or “A” frame tents designed for 3-4-season use are acceptable. The tent should have a breathable body, a waterproof fly, openings that close tightly, and the strength to withstand winter winds. Large areas of mesh in the ceiling, which is becoming more popular in many 3-season tents, is a drawback as snow may get in during a storm. Be sure to seal all seams if they are not factory sealed.

Snow Stakes:

Necessary if your tent needs stakes. Skewers or standard pegs will not hold in soft snow.

Groundsheet:

A groundsheet will protect your nylon floor from the abrasiveness of the snow and other forest products.

Stove:

Wood fires are unacceptable for practical, as well as environmental reasons. Stoves will be used for all cooking. There will be no cooking in the tents due to the carbon monoxide hazard and the fact that there is no quick way to dispose of a flaring stove.

The demands on backpacking stoves are more severe in winter than other times of the year. Stoves are used more frequently and for longer periods. Desirable characteristics include a high heat output, stability while holding a large pot, and reliability. A good winter stove will also have an integral pump.

Stoves that run on anything but Coleman fuel or equivalent please leave at home.

Be sure to service your stove thoroughly prior to Winter School. Replace old gaskets and oil/replace the pump leather. Test it thoroughly. Put it in the freezer for an hour and then try to light it quickly. Each year about 20 to 30% of the stoves at School fail for one reason or another. Stove repair in the field is not fun.

Windscreen:

A windscreen is often necessary to increase efficiency. Certain stoves may be relatively useless without one.

Insulated Platform:

Many stoves send sufficient heat out of the bottom of the stove to melt the snow underneath and upset the pot of whatever is cooking. Burns resulting from a spilled pot of boiling water are a

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serious backcountry hazard. Participants have used snowshoes under their stoves in the past with undesirable consequences. Therefore, each person who brings a stove should also bring a piece of closed cell foam or similar heat resistant product to provide support for the stove. Get or make something that provides support without melting the snow underneath and tipping the pot over. Try it out at home.

Spare Stove Parts:

A small kit of extra stove parts is important! O-rings, gaskets, cleaning tools, etc... if you bring a stove, bring a set of repair parts.

Pots:

Large lightweight pots (2 quarts or larger) are very handy for melting snow and boiling large quantities of water. All pots should have a tight-fitting cover. Smaller pots are less efficient and make the cooking process more time consuming. If your pot does not have a handle, be sure to include a "pot gripper".

First Aid Kit/Medications

The following table lists the basics of a sound first aid kit.

FIRST AID KIT ITEMS		
Item	Quantity	Use
Alcohol swabs	5 each	Cleaning skin
Antacid	8 to 12 tablets	Indigestion/heartburn
Antibacterial Soap - hotel size	1	Cleansing abrasions
Anti-diarrhetic	6 tablets	Relief of diarrhea
Aspirin or Equivalent	10+ tablets, 5 grain	Minor pain
Band-Aids	10 each, 1" wide	Lacerations
Elastic Bandage	1 each, 3" wide	Support, sprains, hold dressings in place
First Aid/Rescue Info	1 each	Easy reference
Moleskin or Molefoam	2 of each, 4" x 4"	Blister prevention
Needle	1, medium	Splinters
Pencil & Paper	1 each	Notes, messages, fill out accident report
Quarters	2	Emergency phone calls
Safety Pins	3, large	Varied uses
Sanitary Napkin or 5 x 9 Gauze	1	Large bleeding wounds
Scissors	1	Cutting moleskin, tape
Space Blanket	1	Protection, warmth
Steri-Pad Gauze	4, 4" x 4"	Larger abrasions
Triangular Bandage	1	Cravat, sling, etc.
Waterproof Adhesive Tape	1 roll, 2" wide	Securing dressings
Antiseptic Ointment	1	Abrasions, burns
Individual Medications	As needed	

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OPTIONAL GEAR

Underwear/Briefs:

Sorry we have to mention it again, but **DON'T EVEN THINK OF BRINGING UNDERWEAR WITH ANY COTTON!** Synthetic briefs or 100% nylon running shorts both work well.

Comfortable synthetic bras are also available. Since we will live in our long johns, no underwear is a common solution as to what to bring.

Summit Pack:

Your backpack can be used for climbs and day trips. External frame packs **DO** hang up on trees on narrow trails and during bushwhacks. A summit pack must have a **MINIMUM** 2,500 cubic inches capacity. Small teardrop shaped day packs do not have sufficient space for the proper equipment carried on winter day trips.

Please also keep in mind that each group going out on a day trip will carry several items of emergency gear that will be split up amongst the group. You may be asked to carry a means of shelter (tent, bivi sack or zdarksy sack), a means of providing warmth (sleeping bag and pad), a means of providing hot food and water (stove, pot, fuel and food or a thermos and food), or a first aid kit.

Your summit pack must be able to hold everything required in the "Dayhike" equipment list.

Toilet Paper and Tampons:

The "100% natural", and environmentally preferred alternative to tissue is a snowball. It is highly effective and nowhere near as unpleasant as you might think. An added benefit is that the snow helps to keep you significantly cleaner. Women should also be prepared if there is even the faintest chance their monthly cycle may coincide with this week. Don't forget that heavy exercise sometimes causes a period to begin sooner.

If you use toilet paper and you are not schooled at a location with an outhouse, plan to pack out or burn your used toilet paper. We don't wish to contribute to the surprise that many spring campers discover after all the snow melts.

Insulated Booties:

These booties are not really considered footgear, but can be nice to have for wearing around camp. Booties with a layer of closed-cell foam in the bottom are suggested so you have insulation between your feet and the snow.

Snow Shovel:

A lightweight snow shovel is very handy for constructing snow kitchens, digging snow caves, and creating emergency shelters.

Lip Balm and Sunscreen:

Strongly recommended.

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Whisk Broom:

A small broom is helpful for sweeping up the snow that will inevitably find its way into your tent (and may then melt).

Collapsible water bucket:

Very useful for carrying water from a hole in the ice to camp.

Other Items on List:

Bring them if you wish.

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IV. FOOD

Nutrition is a subject of such variety and detail that only general principles and hints will be given here. Note that different sections of Winter School may have different meal arrangements. The information below applies primarily to backpacking sections, but also gives some good advice to dayhiking sections. Most people will have to find a compromise between their everyday eating habits and those ideal for winter climbing. Keep four points in mind:

- (1) Your fluid intake must be increased dramatically to function well in the cool, dry winter air. **DEHYDRATION IS PROBABLY THE MOST COMMON CAUSE OF POOR PERFORMANCE IN THE MOUNTAINS.** A study has shown that serious dehydration can cause 20 to 30% drops in anaerobic leg and arm power. Since thirst is not an accurate indicator of when your body needs water, a routine of drinking must be established. Your daily intake should total about 4 liters. The staff will remind you (repeatedly) of this fact. Be prepared to drink on the trail and to prepare meals with more fluids (herbal tea, cocoa, soup, etc.) than you would normally have at home.
- (2) Your meals must be very easy to prepare and eat; thus only those requiring rehydrating are allowed. (Delicate simmering and the subsequent scrubbing of dirty pots are not fun in the cold and dark.)
- (3) All foods must be as lightweight as possible.
- (4) You will need a lot of food, say 4,000 calories per day. Most people are accustomed to eating only around 2,000 calories. You will also need to highlight different types of food at different times so as to allow your body to function most effectively.

Four major food groupings are important to our discussion - simple carbohydrates (sugars), complex carbohydrates (grains), proteins and fats. It is important to have the correct mix of each type of food to assure that your body has something available to burn for energy.

Your body can be likened to a fire in a wood stove. If you want to keep warm, you have to feed it fuel. Tinder/kindling (sugar) lights up easily (20 minutes), burns hot, but quickly goes out. This makes hot, sweet liquids (e.g. cocoa, hot gelatin) a good way to start a breakfast on a “brisk” morning. The tinder **MUST** be supplemented with medium-sized split wood (complex carbohydrates, some proteins). The split wood takes longer to catch, but once going, it burns steadily, with high heat output. Your remaining breakfast and daytime food should heavily emphasize complex carbohydrates since they are the best source of energy for exercising. This brings us to the big thick hardwood logs (fats). These are very tough to ignite (up to 6 hours), but once they do they will burn for a long, long time. Your hot evening meal should contain complex carbohydrates and proteins, but it is wise to also include more calories from fats since you want a long term, low-level fire to last through the night.

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Needless to say, it is not in your best interest to allow the fire to go out, since it is difficult to re-light in extreme conditions. If the fire is almost out (i.e. you are tired and cold), remember that a big log will not help. You need to start with kindling and split wood to build up the heat, and then add the log.

Breakfast:

Breakfast is a much more important meal during winter mountaineering than other times. You cannot hope to eat enough in just two meals (lunch and supper) to supply your daily needs. A good breakfast will also provide the energy you need later in the day. Drink mixes, hot gelatin, herbal tea, decaffeinated coffee, etc. are important to rehydrate after the long night. Instant hot cereal of any type is a standard. It can be supplemented with honey, brown sugar, fruit (raisins, dried apricots, etc.) and powdered milk to make it more palatable. Other options include bagels, muffins, or other “high carbohydrate” baked goods like banana bread. Freeze-dried breakfast items are fine, as long as they supply substantial amounts of carbohydrate and the calories. You can consider adding things to the freeze-dried meals as well.

Day Food:

“Lunch” begins almost as soon as you leave camp, and continues through the morning and afternoon. It must be portable, unharmed by freezing, and easily divided into numerous small installments since long stops are impossible. It must also be easily accessible while hiking and require no cooking or further preparation. The basic idea is to have your jacket pockets (or a hip belt-mounted pocket) full of breads, crackers, cookies, cheese, salami, nuts, raisins, dried apricots, candies, gorp, etc. All of these items should be pre-sliced into bite-sized pieces, since big frozen blocks are difficult to eat. Your leaders will be constantly reminding you to eat, as well as drink.

Evening Meal:

The general rule for dinners is that they must be able to be prepared without fuss. Cookgroups will not have time for each member to take 20 minutes with the stove to cook up a meal. All dinners must consist of foods that can be prepared only with the addition of boiling water.

The most common dinners with these characteristics are freeze-dried meals. Other dinners are fine, as long as they meet the “hot water only” rules. For example, instant mashed potatoes are highly recommended by some of the staff.

If you do decide on freeze-dried dinners, check the packages carefully to BE SURE THAT NO COOKING IS REQUIRED (Many brands require extended simmering). You want the type that you pour in the water, stir, wait 5 to 10 minutes, and then munch away. Most people use an insulated container (such as the padded stove-storage containers) to keep their food hot while it rehydrates. Meals can be reconstituted in a freezer-weight zip-lock bag, or in the pouch that comes with some freeze-dried meals. Most people also bring an insulated mug to drink hot liquids out of or for instant oatmeal at breakfast. Be sure to check the quantity of food in each package. Some manufacturers are extremely optimistic when it comes to the number of hungry

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people their product will serve. You can also add items to those meals to make them more interesting.

Winter is lousy time to experiment with dinners. Order a variety of items and try them first. If they are palatable, then maybe they are worth carrying in. Remember everything you carry in, you have to carry out. If it tastes horrible in your dish, you have to either eat it or carry it out. It weighs a lot more rehydrated.

If you do not wish to purchase prepackaged freeze-dried meals, another option is to dry your own food or purchase freeze-dried items in bulk and make your own meals. It is best to test home dried foods for acceptable rehydration before leaving home. Check the references section of this booklet for information on dehydrating you own meals suitable for Winter School.

Other Considerations:

Bring a stuff sack (with some cord) to put your food in to hang during the day. The bears are hibernating, but you can't imagine how innovative the pine martins and other animals are at getting your food even if it is in your tent.

You should plan on one dinner for each night in the field plus one extra for emergencies.

Before you leave home, lighten your load as much as possible by repacking your food and removing all unnecessary packaging. To avoid fumbling around on a cold dark night in camp, it may be useful to organize your food in zip lock bags. One system that works is to put smaller bags containing one dinner and the following day's breakfast and lunch into one larger zip-lock bag. That way you never need to root around in your stuff sack – simply pull out one of the larger zip-locks at dinner time – it will contain all the food you need until the following dinner. This system also helps prevent you from bringing too much in the way of snacks. It is a common occurrence for students to be hiking out after a four-day backpacking trip with many pounds of gorp left over in their pack.

Moving to the other end of the digestive system, former participants have sometimes experienced problems with constipation or diarrhea. Diarrhea is often caused by the remnants of a cold or flu and is usually not a major problem unless severe. It is however inconvenient, and requires the individual to increase liquid intake to prevent dehydration. Constipation is much more common, given the emphasis on high energy / light weight / low bulk foods. If you become constipated, your performance will be seriously diminished. Dried fruits, high fiber cereals, and spicy meals are helpful in remedying this situation. Hot drinks and a few prunes each day may also help.

Each person's metabolism is different, so it may take some experimentation to find the combination of foods that work best for you. Try them out on the trail before coming to Winter Mountaineering School.

When at the base camp facility breakfast and dinner are provided. There will also be a table at base camp where you may prepare lunch for the day's activities and to bring with you on backpack trips.

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V. CONCLUSIONS

Proper clothing, food and equipment are essential for the comfort, safety, and the well being of your party. We recognize that each individual will have different requirements. One of the functions of Winter Mountaineering School is to help you learn what is safe and right for you. The required items are those that our many years of personal experience have shown form the basis for a sound and safe winter equipment inventory.

Be honest with our staff and yourself. If you are not properly prepared and your equipment is less than satisfactory, there is little chance you will enjoy your experience at Winter Mountaineering School. Learning and enjoyment are the two things we are hoping to maximize. Please don't put yourself, and your hiking/backpacking group, in a difficult situation by making shortcuts in conditioning, clothing, food or equipment.

FINALLY, DO NOT POSTPONE PACKING UNTIL THE DAY BEFORE COMING TO WINTER SCHOOL. THE BEST WAY (ONLY WAY?) TO PREPARE FOR THIS PROGRAM IS TO TAKE ALL YOUR WINTER GEAR OUT ON A HIKE PRIOR TO WINTER SCHOOL. WE CANNOT EMPHASIZE THIS POINT STRONGLY ENOUGH!!! THE ODDS OF ALL YOUR GEAR BEING IN PERFECT CONDITION, YOUR FOOD BEING PROPERLY PLANNED, AND THE WHOLE THING FITTING TOGETHER ARE INFINITELY SMALL WITHOUT A SHAKEDOWN TRIP.

We pride ourselves on having an excellent volunteer staff of knowledgeable mountaineers. Please feel free to contact us if you have ANY QUESTIONS WHATSOEVER about Winter Mountaineering School.

See you in the Mountains!

The Winter Mountaineering School Staff

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VI. SELECTED READING/RESOURCES

BOOKS

General Winter Skills

- **Mountaineering: The Freedom of the Hills, 6th Edition**, The Mountaineers, 1997.
A classic reference. While large parts of the book are geared towards technical rock and ice climbing, it has much to offer students of our program. The diagrams and descriptions of crampon and ice axe use are especially useful.
- **Extreme Alpinism: Climbing Light, Fast, and High**, Mark F. Twight, James Martin, and Don Graydon, 1999.
An alternate method of mountaineering – light and fast. A different take on what gear you need.
- **Allen & Mikes Really Cool Backcountry Ski Book: Traveling and Camping Skills for a Winter Environment**, Allen O'Bannon, 1996.
While geared towards the backcountry skier, this small book is mostly about winter camping. An entertaining book loaded with practical advice and tips on winter camping. The sections on snow shelters are excellent.
- **Winterwise: A Backpackers Guide, 2nd Edition**, John Dunn, 1997.
Another good all-around reference for winter travel and camping, this is put out by the Adirondack Mountain Club and written by a previous Winter Mountaineering School instructor.
- **Don't Die on the Mountain**, Dan Allen, 1998.
Another excellent general reference for winter hiking and camping, written by a previous Winter Mountaineering School Instructor.
- **AMC Guide to Winter Camping, 2nd Edition**, Steve Gorman, 1999.
The Appalachian Mountain Club's guide to Winter Camping. A good all-around reference.
- **The Mountaineering Handbook**, Craig Connally, 2004.
New-school nutrition, gear, and techniques.

Map and Compass

- **The Outward Bound Map & Compass Handbook**, Glenn Randall, 1989.
An excellent and concise guide to backcountry navigation. A couple of evenings with this book are worth at least as much as many of the map and compass courses that are available.

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Wilderness Navigation: Finding Your Way Using Map, Compass, Altimeter & GPS, Bob Burns and Mike Burns, 2004.

A nice compliment to the Outward Bound book.

First Aid

- **The Outward Bound Wilderness First-Aid Handbook,** Jeffery Isaac, 1998.
Recommended by Wilderness Medical Associates – one of the companies that certifies individuals in Wilderness First Aid.

Food and Cooking

- **Backcountry Cooking: From Pack to Plate in 10 Minutes,** Dorcas Miller, 1998.
This book features meals made with home-dried and store-bought ingredients. The backcountry preparation for most of the recipes entails adding boiling water and waiting – a perfect reference for winter campers looking for an alternative to freeze-dried meals.
- **Freezer Bag Cooking: Trail Food Made Simple,** Sarah Svien Kirkconnell, 2007.
More recipes and methods that adhere to the recommended winter school meal preparation methods, without resorting to freeze-dried meals.

Winter Adventure and History – a tiny sampling of what is out there.

- **Minus 148°: First Winter Ascent of Mt. McKinley,** Art Davidson, 1999.
A gripping record of the first winter ascent of Mt. McKinley. You will read about many of the same techniques taught at Winter School and see them put to the test. A great example of leadership and perseverance under extreme conditions.
- **Desire and Ice: Searching for Perspective Atop Denali,** David Brill, 2002.
A regular guy takes a winter mountaineering course and then attempts Denali.
- **Forest and Crag, A History of Hiking, Trail Blazing, and Adventure in the Northeast Mountains,** Laura and Guy Waterman, 2003.
The definitive history of the mountains of the Northeast. Includes an early history of the Winter Mountaineering School, and defines the “Adirondack School” of climbing mountains in the winter.

ADDITIONAL EDUCATIONAL RESOURCES

- Map and Compass, Wilderness First Aid, Leave No Trace, and other outdoor skills: The Adirondack Mountain Club (www.adk.com).
- Outdoor Leadership Training: AMC Mountain Leadership School (www.outdoors.org).

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- Extended Outdoor Skills and Alpine Mountaineering Training: National Outdoor Leadership School (www.nols.org).
- Organized Group Winter Hikes: Individual chapters of the Adirondack Mountain Club (www.adk.com) and Appalachian Mountain Club (www.outdoors.org).