American Alpine Institute Ltd.

SIERRA NEVADA & COLORADO ROCKIES
WINTER MOUNTAINEERING EQUIPMENT LIST

It is essential that you do a careful job in selecting and preparing your equipment for this course. The weather in the mountains is a major objective hazard, even in the summer, and in the winter it can present extreme challenges to survival. Temperatures are typically in the teens but can easily drop to -10 to -20 F and be accompanied by high winds and blowing snow. These conditions, in combination with the long periods of inactivity required to belay a climber on a difficult pitch, can easily lead to problems of hypothermia or frostbite. We can teach climbing in difficult conditions, but we cannot teach hypothermic students. For your own safety and that of the group, please take this list seriously and come in good physical condition. If you have any questions about choosing your gear, feel free to call the office and ask for advise.

AAI's Winter Mountaineering program is conducted in the Colorado Rockies and in Sierra Nevada. In both of these areas we will be spending a lot of our time in the backcountry. When equipping yourself for winter backcountry travel you should pay equal attention to the need to have adequate protection from the elements as well as the necessity of traveling light.

As a general rule you should not bring more clothing than you can wear at one time. With the exception of extra socks and hand wear, avoid duplicating layers. Backcountry skiing and climbing is always a challenge. Travel light to avoid making it an ordeal.

On this program AAI supplies the group climbing gear such as ropes, protection, etc. You need only bring the personal technical gear outlined below. Likewise, AAI supplies snow saws and shovels. If you already own snow shelter building tools, please bring them as it is generally best to become accustomed to using your own equipment.

CLOTHING

The clothing you choose should be warm, lightweight, fast drying and allow good freedom of movement. Synthetics such as polypropylene, pile or fleece, are lighter than wool and also dry much faster. For ice climbing and winter mountaineering the layering system, using several thin insulating layers and a Gore-Tex shell, performs well.

Boots: Plastic mountaineering boots.

Examples include: Koflach Arctis Expe and Degre, Scarpa Inverno, and Lowa Civetta Extreme. Single integrated boots such as the Kayland 8001 are more than adequate as well.

Gaiters: These can be regular gaiters or a supergaiter. If using supergaiters they should be glued on in advance. Getting them on your boots is a rather involved process and if they come off while in the backcountry it will be extremely difficult to get them back on.

Examples include: OR Crocodile, Mountain Hardwear Venti-Gaiter, La Sportiva Eiger Insulated, Wild Line supergaiters, Climb High Buzzard supergaiter.

Socks: Wool or synthetic (no cotton). Bring two complete changes. Climbers frequently wear a thin liner sock, and one or two pair of thick socks depending on boot fit.

Camp Booties: Optional. Typically down filled or similar. Can be nice to give your feet a break from your mountain boots around camp. Wearing your plastic boots liners without the shell works as well.

Base Layer Top: This will be your base layer and should be lightweight or silkweight synthetic or wool. Cotton is not acceptable.

Examples include: Marmot Base Layer, Patagonia Capilene, REI MTS, and OR Dry Release products.

Base Layer Bottom: Synthetic materials only for underwear if you choose to wear them. Your base layer and should be lightweight or silkweight synthetic or wool. Cotton is not acceptable.

2nd Layer (Bottom): Expedition weight fleece like material such as Powerstretch or similar fabric. One-piece suits (Farmer-John/Union Suit) are popular but require more planning and effort when answering the call of nature and work best with other layers designed for using the bathroom without removing layers.

Examples include: Mountain Hardwear Farmer John, OR suit, 100-200 weight fleece or Powerstretch, or Patagonia R1 pants. Windproof/Windstopper pants are not intended for this layer.

Soft Shell Pants: A thin, light, stretchy, breathable but wind and snow-resistant layer that is comfortable to wear is ideal. Materials such as Schoeller or Polartec Powershield are preferred. This will be your action layer for your legs and the layer that you will spend the most time in.

Examples include: Patagonia Guide pants, Black Diamond Alpine Pants, Arc'teryx Gamma LT Pants.

2nd Layer (Top): Expedition weight long underwear top, lightweight fleece, or windshirt. A chest pocket is a helpful feature of this multi-use layer.

Examples include: Patagonia R.5 or R1, Marmot Driclime Windshirt

Light Insulating layer: Should be lightweight insulating layer, windproof is a bonus. This is an intermediate piece that can go between your 2nd layer and your shell jacket and/or parka. The weight and design of this piece will vary based on the other items of climbing that you are bringing. The goal or purpose of this piece is to beef up and add warmth to your internal layering system should you be moving in very cold temperatures, but not in need of your heavy insulation (parka). All internal layers (under your shell and parka) should work in combination with each other. Be sure to size outer garments with the idea that you could be wearing all of the layers described above at the same time.

Examples include: Patagonia Puff Jacket or Micro Puff pullover, Patagonia R3 or R4, Wild Things Primalight and EP jackets, or any light and compressible down vest.

Parka: A baffled down or synthetic parka with hood is required. Parkas come in many shapes, sizes and temperature ratings. If you tend to get cold easily, opt for a slightly warmer and more substantial parka.

Examples include: Patagonia Down parka and DAS parka, Feathered Friends Frontpoint Parka and Rock and Ice Parka's, Marmot Plasma and 8000 Meter parkas.

Shell Jacket: Gore-Tex or other waterproof breathable material required. Your shell layer should be sized to comfortably fit over your other clothes (minus your parka). Choose lightweight and comfortable over heavy and durable. Avoid hip pockets.

Examples include: Arc'teryx Alpha and Gamma, Patagonia Jetstream or Stretch Latitude, and Marmot Precip.

Insulated Pants: Down or synthetic insulation (i.e. Primaloft or Polarguard 3D). Full length sidezips are a critical feature. Thick, windproof/Windstopper fleece works but it not ideal. Down pants are acceptable and lighter weight, but are higher maintenance and require more care to not get them wet and/or frozen.

Examples include: Mountain Hardwear Chugach pants, Feathered Friends Volant Pants, Patagonia Puffball pants.

Shell Pants: Gore-Tex or other waterproof breathable material required. Full or hip side zips required for easy on and off over boots and crampons. Choose lightweight and packable over heavy and durable.

Examples include: Arc'teryx Theta LT or Gamma AR Pants, Patagonia Grade VI, or Marmot Precip.

Fleece Gloves/Glove Liners: These need to be dexterous and comfortable, made of powerstretch, fleece, or similar synthetic materials. They do not need to be very insulating. Bring two pair of fleece/liner gloves, one light and one heavier.

Examples include: Mountain Hardwear/Black Diamond Powerstretch Gloves, OR Gripper Gloves, Manzella Fleece gloves, Black Diamond Drytool gloves.

Modular Gloves: Composed of heavy-duty waterproof shells with *extremely* warm liners. These gloves will be worn during any cold/stormy weather and need to be dexterous enough to manipulate carabiners, harnesses, and tie knots. Some gloves can be used in combination with your thinnest liners gloves but this is not required.

Examples include: Black Diamond Guide Gloves, OR Super Couloir, and Marmot Ultimate Ski Gloves.

Mittens: Optional if the warmth of your modular gloves is in question. These are **expedition weight** modular mittens, down or synthetic, with a storm-proof shell. You want your mitts to be extremely warm and thick. This is more important than dexterity. These need to be large enough to allow for liner gloves to be worn underneath. Please attach keeper loops to them.

Examples include: BD mercury mitts, OR Alti mitts, Marmot Expedition Mitts, etc

Head System: Your cold weather head/face system should not leave any skin exposed at all. When wearing your warm hat, face mask, and goggles, there should not be any gaps in

your clothing where wind and snow might penetrate close to the skin level. On the outside edge of your goggles is a common place for climbers to overlook and as a result, get frostbite. Have a friend double check your system to make sure you have complete coverage.

Warm Hat: Big, puffy and warm. Windstopper fabric can be a good idea but makes hearing difficult. This hat will primarily be used while sitting around camp or in very cold and windy conditions.

Beanie Hat/Toque: A thinner synthetic/fleece hat that will fit under your climbing helmet and over your balaclava.

Balaclava or Buff: Thin polypropylene or fleece recommended. Buffs are multifunctional and convenient for a number of uses but they are not overly insulating from the wind and cold.

Face Mask: Thick fleece, windstopper, or neoprene.

Bandana: Serves several purposes while on the mountain.

CLIMBING GEAR

Flotation: For this program you will need some form of location for traveling on snow. The two options for flotation and travel are snowshoes, or alpine touring/telemark skis and skins. Skis are a more efficient and ergonomic method of travel, but skiing is not recommended for people who do not have previous experience with alpine touring or telemark. All members of the group will need to use the same form of travel. Please call or email our administrative office and speak with the program coordinator if you have questions on which method would be best for you and what the rest of the group will be doing.

Skis – Alpine touring skis with a binding that will accept a plastic climbing boot. If you wish to use telemark skis and boots remember that you will have to carry your climbing boots in your pack and will have to change boots back and forth with climbing activity. AAI does rent alpine touring gear,.

Ski Skins - Required for all skiers. Skins which use adhesive are recommended.

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Snowshoes - They should be equipped with an integral crampon (most snowshoes will already have an integral crampon). Snowshoes can be sized smaller than is typically recommended by manufacturers since deep snow is not common on the climbing route.

Examples include: MSR Denali, Denali Ascent,, and Denali Evo are highly recommended. Atlas Model 1022, Model 1025 are acceptable though not as highly recommended. If you have another model that you would like to use, please call our shop for prior approval.

Trekking or Ski Poles - Adjustable poles are recommended. Standard two or three piece trekking poles or avalanche probe poles will work.

Large Internal Frame Pack: For use when we overnight in the backcountry. 5000 to 6000 cubic inches is about the right size.

Ice Axe: For snow climbing; 60-70 cm length.

Crampons - Be sure all points on your crampons are sharp, and that the front points protrude a minimum of 1" from the front of your boot. Bring crampon adjustment tools.

Climbing Harness - Be sure it fits over bulky clothing. Adjustable leg loops help in this regard.

Locking Carabiners - Bring two.

Climbing Helmet – Bike, construction, or other helmets are not adequate for this purpose.

Belay/Rappel Device – Tube style devices or models like the Black Diamond ATC & ATC-XP, Petzl Reverso, and Trango Jaws are recommended.

CAMPING GEAR

Sleeping bag - Rated to -10 to -15F. Down bags are highly recommended due to the lighter weight and greater compressibility. Compression stuff sacks are also highly recommended for your sleeping bags and insulated clothing.

Sleeping Pads - 1/2 inch thickness minimum. Thermarest pads, either 3/4 length or full length, are recommended due to their excellent insulating qualities and comfort. 3/4 length Thermarest pad users should also bring a 3/4 length closed cell foam pad for their feet. Those using Thermarest pads should bring a Thermarest repair kit.

Bivouac Sack - (optional) A lightweight Gore-Tex bivy sack. Useful for sleeping in snow caves or to achieve a warmer rating for your sleeping bag system.

Tent - A lightweight 4-season two-person tent is recommended. Please contact the AAI office concerning sharing tents with other participants. When deciding what tent to bring remember that it is worth trying to go as light as possible.

Stove – Canister stoves are not recommended for winter programs due their poor performance and efficiency in cold weather. Liquid fuel stoves like the MSR line work very well in all conditions and are recommended for this program.

Fuel & Bottle - If your using a white gas stove plan on burning about 3/4 cup of fuel per person per day. (As a reminder, fuel cannot be taken on airplanes.)

Cook Pot - A one-quart pot with lid is fine if you are cooking alone, two quart is better if you plan to cook with somebody else.

MISCELLANEOUS

Avalanche Transceiver - If you have a transceiver, please call AAI to confirm that you have a compatible frequency. If you do not have a transceiver, you can rent one from AAI.

Glacier Glasses - or high quality wrap style sunglasses with 100% UVA/UVB protection.

Ski Goggles - Useful when conditions are very windy.

Headlamp - With extra batteries and bulb.

Hand/Foot Warmers: Recommended for people that are susceptible to cold hands and toes. These should be small, disposable type products like the ones made by Grabber Mycoal. The handwarmer models are much more functional than the toe style warmers.

Personal Medical Kit

- personal medications
- 20 tablets of Tylenol, aspirin and/or Ibuprofen
- one 1 1/2 inch roll of cloth athletic adhesive tape
- minimum 1/2 square foot moleskin
- Tincture of benzoine
- Second skin or similar blister treatments

Toiletries - Half a roll of TP, toothbrush, etc.

Lighters - Bring two. Lighters cannot be in either your checked or carry-on bags when flying.

Eating Utensils - Spoon, cup (1 pint size) and bowl (1 pint to 1 quart size).

Nalgene Bottles/Hydration: 2.5-3 liters of water capacity is the minimum. Hydration packs are not recommended. You should have extensive experience with a hydration system in extreme cold if you choose to bring one. Once they freeze they stay frozen for the duration of the trip. Two or three water bottles, usually one-liter Nalgene type, are required. Other plastic bottles, similar in nature can work as well.

Water Bottle Parkas: These are insulating jackets for your water bottles, one for each bottle. Make sure and label these parkas with your name as it is fairly easy to lose track of yours in a large group.

Examples include: OR Bottle Parka

Pee Bottle: 1 quart size minimum. Soft 2L Nalgene recommended. Plastic bottles from the store such as Gatorade bottles can work well but the lids are less secure than a Nalgene. If you choose to bring one of these, use it carefully and make sure the capacity is adequate. Label your pee bottle well.

Pee Funnel: For women.

Pocket Knife - Swiss army style is good. Smaller style Leatherman models like the Juice line work very well.

Repair Kit - Needle and thread, a small amount of adhesive tape, stove repair kit, Thermarest repair kit, 20 to 40 feet of light cord, crampon adjustment tools.

Food - AAI does not supply food on this program. You should plan on having lightweight food for at least three nights out in the field. For the remaining days bring plenty of quick, high energy lunch food. Please see the included meal planning guidelines.

Garbage Bags - Bring two or three large ones. They serve a large variety of uses.

Stuff Bags - Bring a few of varying sized to help keep your gear or food organized.

Sunscreen: With a protection factor of at least 30. For the fair, the higher the SPF the better. Stick types allow you to apply without exposing fingers. Dermatone produces an effective 1" diameter stick as well as a translucent zinc oxide lotion. A couple of 1 oz. tubes are usually adequate. Only your face and, at times, your hands will be exposed. Several small containers are better than one large one.

Lip Protection: 2 containers/applicators. Highest SPF available. Zinc oxide also works well (available in pharmacies). Dermatone and other companies make lips and face sunscreen that works well.

Camera: We recommend small point and shoot cameras that can easily be carried in an outside pocket or small case outside your pack. If you can't comfortably and safely carry your camera outside your pack, even in bad weather, you'll miss the best photo opportunities. Though some climbers bring them, SLR cameras are not recommended because of weight and bulk.

No battery powered, auto-focus cameras perform well in the cold. Digital cameras can work well but require extra care to protect them from the cold and elements. If bringing a digital camera, consider your battery needs. Bring an extra battery if your camera uses a proprietary lithium ion type. If your camera uses AA or AAA batteries, use lithium batteries and bring one or two sets of extra batteries, more if you take a lot of photos.

Entertainment: Books, games, cards, for stormy days in the tent and long, dark, winter nights. Music players like walkmans, mini-disc and Ipods/MP3 players are popular because the device and media are small and relatively lightweight.

Journal and Writing Device: Some climbers like to keep a journal or log for writing on the trip. Ball-point pens work well in the cold but other ink well type pens do not. Rite-in-the-Rain notebooks are more durable and more functional for the mountain environment than regular notebook paper.

Compass: Pretty much any standard compass will do. Suunto and Silva both make a wide variety of models.