

**American Alpine Institute**  
**Alpine Mountaineering and Technical Leadership**

**Part 3a - Picket Range**  
**Advanced Alpine Mountaineering and Rock Climbing, Aid Climbing, Big Wall Techniques**  
**and Remote Cascade Expedition**

**Curriculum**

**Advanced Aid and Free Climbing Skills:**

- selection & use of personal equipment for an aid climb including specific ropes, harnesses, & equipment
- design concepts, selection & use of technical equipment for mixed aid & free climbing
- advanced rigging for multi-pitch climbing
- use of big wall gear & equipment including etriers, daisy chains, mechanical ascenders, haul bags, port-a-ledges, leeper cams, hooks & an assortment of other gear
- use of fixed lines
- strategy for multi-pitch aid or mixed climbs
- strategies for multi-pitch descents
- techniques for hauling, big wall bivies, & for pendulums
- clean aid climbing techniques
- complex hauling systems
- management of hanging belays
- strategies for multi-day routes

**Expeditionary Skills:**

- planning and preparing for a large scale backcountry expedition
- continued training on the use of maps, compasses, GPS, and guidebooks
- strategizing for multi-day “carry over” routes in a remote setting

**Ice Climbing and Mountaineering Skills:**

- continued study of ice climbing technique including all ice axe positions
- review of glacial and ice structures
- development of advanced technical protective systems in an alpine setting
- advanced study of movement over complex alpine terrain

**Objective Hazards Evaluation & Self-Rescue Skills:**

- evaluation & prediction of mountain weather patterns
- introduction to the assessment of natural hazards
- individual & team crevasse rescue techniques

**Leadership Skills:**

- continued study and practice of individual technical leadership skills
- technical & personal functions of individuals on an ascent: roles & responsibility
- problem solving: gathering appropriate data & assessment techniques
- evolving leadership roles: individual leadership vs. collective decision making
- large and small team expeditionary leadership strategy

## Itinerary

The following is an example itinerary. This is subject to change due to weather, fitness, technical skill, road closures, wildfires or a variety of other circumstances. All course material will be covered, it simply may not be covered in this order.

It is likely that participants will go out to dinner one to three times throughout the duration of the course.

### **Day 1:**

Meet in Bellingham at 7:00am at the American Alpine Institute office. Drive to Index and begin aid-climbing instruction. Guides will demonstrate lead climbing on aid and gear cleaning techniques. Students will demonstrate an understanding of these principals. Car camp.

### **Day 2:**

Continue the study of aid climbing technique. Develop an understanding of steep aid technique, hooks and leeper cams. Develop an understanding of the use of fixed lines in aid climbing. Introduce the basic principals of using a haul bag. Begin to develop a plan for the expedition portion of the trip. Car camp.

### **Day 3:**

Students will continue to practice aid climbing, applying all of the techniques that they have learned up to this point. Additionally, they will begin to work with the concepts of combined aid and free climbing, pendulums, and port-a-ledge bivies. Continue to discuss the expedition portion of the trip. Sleep on port-a-ledge or car camp.

### **Day 4:**

The final day of aid climbing will culminate in a small ascent of a multi-pitch line. Every principal of both aid and free climbing will come into play in order to complete the ascent. Finish strategizing the expedition portion of the trip. Sleep on port-a-ledge or car camp.

### **Day 5:**

Stop at a grocery store to resupply for the expedition portion of the trip. Pack for the backcountry and then drive to the trailhead. Make an approach to your initial camp.

### **Day 6-12:**

The remaining portion of the trip will be planned during the first four days. During the expeditionary timeframe, climbers will have the opportunity to climb a number of remote peaks deep in the Picket Range of the Cascades. Depending on the interest of the participants, these ascents may be more heavily oriented toward rock, ice or glacial mountaineering. All participants will have the opportunity to “take the sharp end” in both technical leadership as well as in group leadership.

**Part 3b - Bugaboos**  
**Advanced Alpine Climbing, Squamish Speed and Efficiency Clinic**  
**and Bugaboos Expedition**

**Curriculum**

**Advanced Free Climbing Skills:**

- selection & use of personal equipment for advanced alpine climbing
- development of speed climbing and speed transition techniques for long rock climbs
- study of alternative belay techniques expedite anchor building and transitions
- study of advanced belay station organizational skills and techniques
- continued study of fall factors, rope and equipment specs and how to minimize equipment wear on long exposed routes
- development of speed climbing strategies for advanced alpine routes
- practical application and study of both forced and unforced bivies on cliff-faces
- continued study and practice of rock climbing movement skills
- continued development of mountain sense and the ability to follow a “line of weakness” on a mountain feature

**Expeditionary Skills:**

- planning and preparing for a large scale backcountry expedition
- continued training on the use of maps, compasses, GPS, and guidebooks
- strategizing for multi-day “carry over” routes in a remote setting

**Mountaineering Skills:**

- review of glacial and ice structures
- development of advanced technical protective systems in an alpine setting
- advanced study of movement over complex alpine terrain

**Objective Hazards Evaluation & Self-Rescue Skills:**

- evaluation & prediction of mountain weather patterns
- introduction to the assessment of natural hazards
- individual & team crevasse rescue techniques

**Leadership Skills:**

- continued study and practice of individual technical leadership skills
- development of technical rock leadership strategies for multi-pitch ascents
- technical & personal functions of individuals on an ascent: roles & responsibility
- problem solving: gathering appropriate data & assessment techniques
- evolving leadership roles: individual leadership vs. collective decision making
- large and small team expeditionary leadership strategy

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It is likely that participants will go out to dinner one to three times throughout the duration of the course.

### **Day 1:**

Meet in Bellingham at 7:00am at the American Alpine Institute office. Drive to Squamish. Participants on this course need to have a clean record and a passport to cross the border. Review single pitch leadership and rock rescue techniques. Car camp.

### **Day 2:**

Review multi-pitch techniques with an emphasis on transitional speed and efficiency. Practice in a “mini-pitch” environment. Continue to review rock rescue and to lead shorter routes. The focus of leading shorter routes will be leadership movement skills (i.e. placing gear while on difficult terrain while leading). Car camp.

### **Day 3:**

Students will begin to lead longer multi-pitch routes with an emphasis on speed and efficiency. On day three, students will attempt at least one longer line. Tricky descents will be addressed as well as long multi-pitch rappels. Car camp.

### **Day 4:**

The final day of multi-pitch practice will culminate in a “link-up.” Students will attempt to complete two long routes in a day. If there is sufficient interest, students will bivvy “on-route.” Car camp or bivvy.

### **Day 5:**

Stop at a grocery store to resupply for the expedition portion of the trip. Pack for the backcountry and then drive to the trailhead. Make an approach to your initial camp.

### **Day 6-12:**

The remaining portion of the trip will be planned during the first four days. During the expeditionary timeframe, climbers will have the opportunity to climb a number of remote peaks deep in the Bugaboos of the Canadian Rockies. Additional mountain skills will be covered between ascents during this portion of the training. All participants will have the opportunity to “take the sharp end” in both technical leadership as well as in group leadership.

**Part 3c**  
**Ski Mountaineering and Remote Alpine Ski Tour**

**Curriculum**

**Backcountry Ski and Ski Mountaineering Skills:**

- selection & use of personal equipment for advanced ski mountaineering
- an introduction to snowpack formation, metamorphosis, and stability assessment
- cross country and downhill skiing skills; methods of ascent and descent
- adjustment in technique for challenging snow conditions
- route selection and hazard assessment
- roped skiing and travel skills
- constructing snow anchors with ski equipment and operating belays
- basic skills for the use of ski crampons
- Leave No Trace travel, climbing and camping skills
- design concept and selection of equipment
- use of electronic transceivers; avalanche rescue procedures

**Expeditionary Skills:**

- planning and preparing for a large scale backcountry expedition on skis
- continued training on the use of maps, compasses, GPS, and guidebooks
- strategizing for multi-day backcountry tours in a remote setting

**Mountaineering Skills:**

- review of glacial and ice structures
- continued development of mountain sense and the ability to follow a “line of weakness “
- development of advanced technical protective systems in an alpine setting
- advanced study of movement over complex alpine terrain

**Objective Hazards Evaluation & Self-Rescue Skills:**

- evaluation & prediction of mountain weather patterns
- introduction to the assessment of natural hazards
- individual & team crevasse rescue techniques
- avalanche awareness and rescue procedures

**Leadership Skills:**

- continued study and practice of individual technical leadership skills
- development of technical ski leadership strategies on complex terrain
- technical & personal functions of individuals on an ascent: roles & responsibility
- problem solving: gathering appropriate data & assessment techniques
- evolving leadership roles: individual leadership vs. collective decision making
- large and small team expeditionary leadership strategy

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It is likely that participants will go out to dinner one to three times throughout the duration of the course.

### **Day 1:**

Meet in Bellingham at 7:00am at the American Alpine Institute office. Once we have completed a thorough gear check, we will drive up to the Heather Meadow Lodge at the Mt. Baker ski area. Students will study and practice the use of avalanche beacons, shovels and probes. They will be introduced to basic backcountry ski equipment such as skins, bindings, ski crampons, etc. In the afternoon of the first day, we will begin to work on the larger concepts of the course such as terrain selection and evaluation, track setting, route finding, the proper use of ski touring equipment and backcountry safety. Car camp.

### **Day 2:**

On the morning of day 2 we will begin the day with some lessons in camp or at a nearby coffee shop. The instructors will introduce navigational equipment and will cover the skills required to create a tour plan. Once that is complete, we will drive back up to the outskirts of the ski resort and head into the backcountry. Once in the field we will cover more terrain and have the opportunity for downhill track setting and the study of efficient group movement. We will introduce navigational skills and continue to review and fine-tune all of the skills up to this point. Car camp.

### **Day 3:**

On the third day of the program we head into the north side of Mt. Baker and set-up camp at 5,000 feet near the lower Coleman Glacier. We will practice track setting with bigger loads and we will begin to look at the concept of “going light” on skis with minimal bivy gear. Once camp is set-up we will review emergency beacon searches, with an emphasis on multiple burial scenarios. Backcountry camp.

### **Day 4:**

Climbing in ski boots and crampons is a tricky and difficult proposition. Part of proficient movement in the mountains with skis is the ability to combine the skills from AMTL 1 and 2 with your new ski skills. On day four, we will study movement on technical ice terrain wearing ski boots and crampons. We will look at how to build snow and ice anchors with ski equipment and we will study how to transition from skiing into rappelling or climbing. Late in the day, we will do another short ski tour. Backcountry camp.

### **Day 5:**

On the fifth day of the trip, we will apply glacier travel and crevasse rescue skills to ski mountaineering. This will include self-arrest techniques for skiers, one-on-one crevasse rescue with skis on, and multi-team crevasse rescue. Once each member of the team has a complete understanding of his or her systems, the team will go on another short glacier ski tour. That evening we prepare for the ascent the following day. Backcountry camp.

**Day 6:**

On the sixth day of the program we will attempt to ski Mount Baker from the top. After we have skied the mountain we will descend to the car and spend the night at a car camping campground. Car camp.

**Day 7:**

This day is reserved primarily for planning, logistics and travel. The team will spend the morning of this day planning a multi-day backcountry tour. Possible mini-expedition tours include the Ptarmigan Traverse, a ski descent of Glacier Peak, or even a series of ski descents of different mountains in the Cascades. The guides will help you to develop a plan that is compatible with the team's overall ski skills. You will visit a grocery store on this day to resupply and you will travel to a campground near the start of the tour. Car camp.

**Day 8-12:**

These days are reserved for one major backcountry ski tour or a series of smaller tours. The guides will help you develop a plan that is compatible with the team's skills.

**Part 3d**  
**Mount Waddington Expedition**

**Curriculum**

**Alpine Mountaineering Skills:**

- development of mixed climbing skills – participants will have to climb 5.7 in crampons to get to the summit of Mount Waddington
- continued development of movement skills on moderate to steep ice
- development of simul-climbing skills on lower angled ice with running belays
- study and practice of transitions between glacier travel mode and technical climbing mode
- continued study of the proper choice between and application of the primary ice axe positions: piolet canne, panne, manche, poignard, ramasse, rampe, ancre, and traction
- specialized designs and uses of alpine and technical tools in high angle climbing
- free climbing technique on overhanging ice
- advanced concepts in the proper selection and placement of ice screws, snow flukes and pickets for belays and intermediate protection
- integration of specific skills with the general goals of efficient, safe, and self-dependent climbing

**Expeditionary Skills:**

- continued training on the use of maps, compasses, GPS, and guidebooks
- strategizing for multi-day backcountry tours in a remote setting
- practical application of expeditionary staged camp techniques

**Mountaineering Skills:**

- review of glacial and ice structures
- continued development of mountain sense and the ability to follow a “line of weakness “
- development of advanced technical protective systems in an alpine setting
- advanced study of movement over complex alpine terrain

**Objective Hazards Evaluation & Self-Rescue Skills:**

- evaluation & prediction of mountain weather patterns
- introduction to the assessment of natural hazards
- individual & team crevasse rescue techniques

**Leadership Skills:**

- continued study and practice of individual technical leadership skills
- development of technical ski leadership strategies on complex terrain
- technical & personal functions of individuals on an ascent: roles & responsibility
- problem solving: gathering appropriate data & assessment techniques
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### **Day 1:**

Meet in Bellingham at 7:00am at the American Alpine Institute office. Once we have completed a thorough gear check, we will work together to make a plan for the expedition. Before we leave Bellingham, we will shop for any last minute food at the grocery store. The group may choose to cook together to save weight. Drive up to the flight service in Canada. This will be an eight-hour drive. Participants on this course need to have a clean record and a passport to cross the boarder. Car camp.

### **Day 2:**

The Bravo Glacier route begins on the Tiedemann Glacier at its junction with the Bravo Glacier. We will use a helicopter to fly into a feature on a shoulder near this area called Rainy Knob (6,955'). Bury a cache with an emergency tent, extra food and fuel at the landing site and establish a Base Camp. The team will review skills and survey the route for the remainder of the day. Backcountry camp.

### **Day 3:**

The team will get up very early and will ascend the Bravo Glacier to Camp I at the Cauldron Camp (8,858'). Snow conditions can lead to very slow travel as the team ascends a multi-tiered and heavily crevassed icefall. Backcountry camp.

### **Day 4:**

We will get up extremely early again to avoid the heat of the day. The team will work its way up to a very steep bergshroud, which may require vertical ice climbing. Once the 'shroud has been surpassed, the team will continue up fifty-degree snow and ice to lower-angled terrain. The final obstacle before camp will be to find a way through two extremely problematic crevasses. Once we reach the Spearman Saddle (10,662') we will establish Camp II. Backcountry camp.

### **Day 5:**

After two harder days, this day will require a shorter, less dramatic climb up to the final crevasse at 12,139 feet. We establish Camp III as high as possible to put us in position for not only the "true" summit tower of Mount Waddington, but also to give us the option of climbing the Northwest Summit as well. Backcountry camp.

### **Day 6:**

Summit day! This is a very serious undertaking that may involve mixed climbing up to 5.7 on ice-covered rock. As a result we will get up very early to make an ascent to the 13,177-foot summit. Most teams take 10-12 hours round trip to climb the summit tower. Backcountry camp.

### **Day 7:**

If time and weather permit, we may make an ascent of the Northwest Summit from our high camp. Conversely, if the summit tower is too iced-up to climb, we may elect to ascend this lower peak as a consolation prize. An ascent of the Northwest Summit will require a four to six hour

jaunt on steepish terrain with a double-bergshrund to negotiate and 55-degree terrain to surmount before climbing to the summit. If time permits, we may begin the descent late in the day.  
Backcountry camp.

**Day 8:**

Begin to descend the Bravo Glacier route. Much of the route is exposed to morning sun and it may be necessary to wait until later in the day to descend. Most parties will take one to two days to get back to Rainy Knob. Backcountry Camp.

**Day 9:**

This last day will be used to fly back out from Rainy Knob. Car Camp.

**Day 10-12:**

There are significant weather issues on Mount Waddington. The remaining days in the itinerary will be used as weather days. If you complete the objective early, your guide will help you to select additional suitable training objectives either in the Waddington Range, in Southwest British Columbia, or in the North Cascades. Car Camp or Backcountry Camp.