

Intermediate Glacier Travel Handbook

Introduction

Welcome to Intermediate Glacier Travel! This course teaches both the technical and non-technical skills needed to comfortably plan and lead glacier climbs. Through evening sessions at the Program Center and days in the field, you will practice good climbing techniques, perfect self and team arrests, learn to place protection in snow and ice, manage moderately steep snow slopes (up to 55 degrees), build and equalize anchors, construct advanced haul systems, set up group camps, and more! Lectures will also cover basic expedition planning, including route selection, in-the-field terrain evaluation, a navigation refresher, and how to write a trip plan.

The requirements to successfully complete this course are:

- Obtain an AIARE Level 1 certification prior to attending the field days
- Attend all sessions of the course, including three evening sessions, two field days, and a glacier experience trip
- Complete two trip planning exercises
- Demonstrate competency in the new skills and techniques taught during the course

Equipment

Most of you will have the items listed below. Recommended items are italicized, but they are not required for the course

- Seat harness
- Helmet
- 3 Locking Carabiners
- 6 Non-Locking Carabiners
- Cordelette
- Single and Double Runners
- Rope ascension system (Texas Prusik, Purcell Prusiks, runners)
- 1 Prusik Minding Pulleys (*2 recommended*)
- 1 Hero Loop (*2 recommended*)
- *1 Ice Screw, 15 cm minimum*
- Ice Axe
- *Second axe or tool*

Course Format

This course is composed of three evening sessions at the Seattle Program Center, two instructional days the field, and a glacier experience trip. Attendance is required and all students are expected to have completed an AIARE Level 1 course prior to attending the field days

Sessions

Evening sessions at the Seattle Program Center will include a lecture on trip planning and glacier travel concepts, an interactive trip planning discussion, and two technical skills seminar introducing a variety of new techniques that will be used during the field trips. Each of these evening sessions are offered on multiple dates; you only need to enroll on one date for each lecture. Unless otherwise specified, these will take place between 6pm and 9pm on the day indicated. Session dates can be viewed on the Intermediate Glacier Travel webpage

Field Days

Attendance of two field days are required to pass this module. A number of field trips will be scheduled in the coming weeks, led by different volunteers. If you're taking this course as part of the Intermediate Climbing package, you are expected to attend the field trip scheduled by your group mentor. If you are taking this module as a standalone course, please contact the Mentor Group/Field Trip leader for permission to register, or sign up for any field trip that are marked "For Module Students". Depending on the field trip leader, the field days may be led either as a single overnight trip or as two separate days. Check the course page for the current field trip offerings and expect more to show up soon.

Experience Trip

Attendance of a one or two day experience field trip is required to pass this module. Students are required to organize teams (most likely in your mentor groups or Field Trip Teams), select a glacier climb, plan the entire climb from start to finish, find a climb leader, and execute the climb. Climb Leaders and any assistant instructors will provide minimal assistance on the course; the students are responsible for all aspects of the climb.

While a two day field trip is preferred, circumstances may prevent this, so a 1 day Field Trip is acceptable. Your Overnight Field Trip leader may elect to use the second day as an experience trip. Please coordinate with your Field Trip leader if this is the case. Again, the intent of the Experience Trip is for you to make decisions on a glacier with some supervision.

Course Details

Prerequisites

Students taking this module come from a variety of backgrounds, however, all should hold a Basic Alpine Climbing badge, Basic Glacier Travel Badge, or be in the process of getting signed off by the Equivalency committee. It is assumed that students are competent in the following skills:

- **Basic knots, hitches, and bends:** overhead on a bight, figure eight on a bight, rewoven figure eight, bowline, alpine butterfly, clove hitch, Munter hitch, Munter-Mule-Overhand, Prusik, autoblock, and Klemheist. All knots and hitches must be properly dressed and have the correct amount of tail
- **Crevasse self-extrication:** set-up of a prusik system and ability to prusik up the rope. Back-up knots or two points of attachment required at all times
- **Basic crevasse-rescue:** In a 3 person rope team, the ability to set up a Drop Loop (2:1) or Z-Pulley (3:1) that has a method to prevent the subject from falling back into the crevasse

Students will also need to complete and AIARE Level 1 course prior to attending Field Days

Evaluation

While there is no formal evaluation or exam to complete this course, these are the expectations of students taking the course

- Complete all lectures and attend all Field Trips
- Attend an Experience Trip
- Complete two trip planning exercises
- Safely demonstrate competency with new material by the completion of the Field Trips and Experience Trip.
- Have fun

Students that are unable to safely demonstrate competency in the new skills and techniques taught during the course may be asked to retake Field Trips or return the following year for additional practice before participating in club Basic Climbs.

Volunteering

All instructors for the climbing courses are volunteers, and we wouldn't be able to make these courses happen without them. Students are encouraged to volunteer with a Basic Alpine Climbing Program to help teach Snow Travel or Crevasse Rescue. Teaching is a great way to get more time to practice skills and develop leadership.

Session 1: Kick off and Lecture

The first evening session will begin with an introduction to Intermediate Glacier Travel and discuss course progression and expectations. There will be a lecture that will include, but is not limited to

- Anchors & Belaying
- Introduction to two person rope travel
- Introduction to group rescue
- Trip Planning

Please note that this first day is heavy on lecture, but we will aim to finish in about 1.5 hours and then go to the basement for some anchor building practice.

Take Home Assignment

A trip planning assignment will be assigned at Session 1 and will need to be completed prior to Session 2. Students will review a navigation refresher and use the trip planning notes to complete a short assignment planning a trip up the Gibraltar Ledges of Mt Rainier. This trip plan will be reviewed at the beginning of Session 2.

Session 2: Trip Planning Review and Technical Skills 1

The first part of this session will review the trip plan homework assignment. Students will get into groups and discuss their respective plans; they will then put together one plan for the table to be presented. Items that must be presented:

- Time to leave camp
- Timing of breaks (quantity and number)
- Estimated summit time
- Estimated turnaround time
- Time to get back to Camp

The second part of this session will be in the basement, where students will practice rappel to ascent transitions and learn about more advanced mechanical advantage systems

Take Home Assignment

Students will form teams and pick an experience glacier climb they wish to execute. Students will be required to turn in a complete trip plan to the IGT Instructor for assessment. It is imperative that students work together to plan the climb.

Ideally, teams should be formed with their mentor group or field trip group. If for some reason you cannot find a group, contact the IGT instructor for assistance. Student teams should be no greater than 8, no fewer than 4. This will allow you to add a climb leader and potentially additional Assistant Instructors to your climb as observers.

Note that some Field Trip leaders may include this experience trip as part of the overall Field Trip. Please work with your Field Trip Leader/Climb Leader to organize this.

The following items shall be included when submitting your plan. Plans should be submitted to the IGT instructor and your Climb Leader one week prior to your Experience Trip

- Primary Route
- Backup route shall be identified, but the plan does not need to be submitted
- Date(s)
- Party Members
- Climb Leader
- Assistant Instructors (recommend 1 per rope team)
- Start time on summit day
- Estimated summit time
- Turn-around time
- Return to car time
- Emergency Reporting Time

Session 3: Technical Skills 2

This session will take place on the roof of the North Wall. Please note that systems will be fully loaded.

This session will contain 3 scenarios:

- Two person rope team, single rescuer, conscious subject
- Three person rope team, 2 rescuers, unconscious climber
- 2 Three person rope teams, 5 rescuers, unconscious climber.

Two person rope team, single rescuer, conscious climber

In this scenario, a follower has fallen over the edge on a two person rope team. The rescuer has escaped the arrest, built an anchor, and transferred the weight to the anchor; they now must rescue their follower.

- Set up system for Drop-C (2:1)
- Raise Partner (may need additional mechanical advantage)

Three person rope team, 2 rescuers, unconscious climber

In this scenario, a follower has fallen over the edge on a rope team and is unconscious. The rescuers have escaped the arrest, built an anchor, and transferred the weight to the anchor; they now must rescue their follower. A rescuer must rappel to the subject to set up the Drop-C (2:1) and then ascend back out to help raise their partner

- Rappel to follower and provide aid
- Attach Drop-C (2:1)
- Ascend the rope on the correct side
- Raise partner (may need additional Mechanical advantage)

2 Three person rope teams, 5 rescuers, unconscious climber

In this scenario, a follower has fallen over the edge on a rope team and is unconscious. The rescuers have escaped the arrest, built an anchor, and transferred the weight to the anchor; however, there is insufficient rope to perform the rescue so a second team must help with the rescue. A rescuer will be lowered or rappel to the unconscious follower and then be raised with the unconscious follower

- Approach the scene/verify the scene is safe
- Build separate anchor system
- Lower rescuer or have rescuer rappel in
- Rescuer attaches ropes and connections to the fallen climber
- On top, rescuers convert system from lower to Z-Pulley raise
- Raise partners (may need to add mechanical advantage)

Field Trip

The goal of the field trip is to provide hands on instruction with the topics we've covered in class. Topics for instruction/discussion may include, but are not limited to

- Crevasse Rescue
 - Two person rope team, single rescuer, conscious climber
 - Three person rope team, 2 rescuers, unconscious climber
 - 2 Three person rope teams, 5 rescuers, unconscious climber
- Travel Techniques (Applies to unroped and roped)
 - Staying in balance
 - "Duck" walk
 - "Duck/toe"
 - High/Low Dagger (if you can find steep enough snow with good runout)
 - Rest Step
 - Pressure breathing
 - Ice Axe Positions
 - Two ice axe travel techniques
- Roped Travel
 - Long vs Short Rope intervals
 - Switchbacks
 - Rope Management
 - Setting wands
- Belaying/Protection
 - Arrest Belay
 - Boot Axe Belay
 - Seated/Bucket Belay
 - Picket Belay
 - Setting Pickets for running protection
 - Ice Screws (condition dependent)
 - Snow Anchors

During breaks or meals

- Campsite Selection and Development
- Leadership topics (aka story time), which may include Medical Situations, Sketched out student, Falls, etc. Topics will be up to the instructors
- Other gear discussion (low priority, time and condition dependent)

Glacier Experience Trip

This trip should be the culmination of the class. You will take the trip plan you developed and execute your climb. The Climb Leader and Assistant Instructors you bring should be tied into the middle of your ropes and provide as much assistance as you would expect from a Basic Student. Their purpose is to provide a final measure of safety and guidance as you explore your first rope lead.

You are responsible for all of it. When you start, when you break, how long you break, which obvious gully to take, how to set pickets, when to set pickets, when to belay, if you need to turn around, etc. Selecting a trip leader from amongst your peers may mimic more realistic climbing, or make all decisions by vote. It's up to you; it's your climb.

Upon completion of the climb (successful or not) the team should write a trip report detailing their experience and providing beta for those that may follow their tracks. The report should be listed on the Mountaineers website and linked to the IGT instructor.

Congratulations on your climb, and on completing Intermediate Glacier Travel!