

SMC MOUNTAINEERING LEVEL 3 TRAINING COURSE SYLLABUS

MTN 3.1

Reference: Mountaineering: The Freedom of the Hills, 8th Edition, The Mountaineers, Seattle WA

ORIENTATION AND SAFETY

Welcome and Orientation

Meet and Greet

Safety Discussion - risk, decision making and teamwork

In Case of Emergency – medical and first aid, radios, leaders, contact info, nearest hospital

MTN 3 Learning Objectives

- Build on the foundation of MTN 2
- Add to existing core knowledge
- Learn technical skills for expedition mountaineering
- Cultivate expedition behavior (p. 470)

SKI / SNOWSHOE MOUNTAINEERING

Mountain Snowshoeing

- Advantages: utilitarian, compact, cheap, easy to learn, can use any boots
- Disadvantages: slow

Nordic or Backcountry Skiing

- Advantages: fast, light, cheap
- Disadvantages: difficult and unstable in steep terrain, hard to learn, boots not compatible with climbing

Modern Telemark Skiing - plastic boots

- Advantages: all around setup for touring and descending
- Disadvantages: expensive, heavy, difficult to learn, requires a good deal of fitness

Alpine Touring ("AT") or Randonee Skiing

- Advantages: boots great for skiing, ok for climbing, stable in difficult terrain and with packs
- Disadvantages: heavy, expensive

EXPEDITION MOUNTAINEERING

Key Principles of Expedition Safety

- Know the hazards
- Know your acceptable risk
- Be prepared for surprises and alert to changing conditions
- Use good decision making to manage risk
- Heed warnings and re-examine your decisions as you go.
- Safety first, friendships second, summit third

Key Principles of Team Leadership

- Established leaders should do all they can to be competent, informed and prepared
- Leadership is a responsibility shared with all members of the group, for the group
- People are more important than things

Expedition Planning, Preparation and Logistics

- Choose Objective and Style
- Research the Route and Approach
- Institute Fitness and Skills Training
- Determine Fees and Permits
- Form the Party
- Determine Group Equipment, Fuel and Food Needs
- Determine itineraries and contingencies
- Check weather and conditions
- Execute your plan

MOUNTAIN NAVIGATION AND ROUTE FINDING

Rates of Travel in Varying Conditions

- 1/2 mph: conservative rate for typical heavy mountaineering loads and travel routes, especially steep, snowy or brushy off trail travel.
- 1 mph: typical rate for mountaineering groups and trailed travel
- 2 mph+: fast rate for travel on trails, light loads or fast parties

Effects of Slope Aspect - in the Northern Hemisphere

- North - coldest, snowiest, steepest
- East - cold, snowy, steep
- West - vegetated, wet, gentle
- South - sunniest, warmest, driest

Principles of Effective Route Finding on a Technical Climb

- Know the route and key landmarks
- Look for fixed gear / rappel anchors
- Tracks in snow
- Other parties

Navigation in a Whiteout

- Know your route and important features well
- Rely on a handrail such as a ridge, linear feature, or bearings
- Carry and use a GPS
- Wait for better weather

Using Wands on a Glacier

- The original "waypoint"
- Carry between 25-75 wands
- Place at critical junctures and crevasses
- In critical need, place within a rope length of the next wand.

Manual Adjustment, Eastern Declination

- Key: magnetic north is east of grid north, so -
- Field bearings require subtraction to become grid bearings
- Grid bearings require addition to become field bearings

Manual Adjustment, Western Declination:

- Key: magnetic north is west of grid north, so -
- Field bearings require addition to become grid bearings
- Map bearings require subtraction to become field bearings

Establish Location Fix on Route Using Altimeter / Slope Aspect Method

1. Shoot fall line of major slope
2. Consult altimeter
3. Correlate bearing and elevation on topo

map of mountain to establish location
Using GPS

- Advantages: useful at night, in poor visibility and to accurately navigate to unseen locations
- Disadvantages: subject to obtaining a

- signal, user error and battery life
- Marking - using a waypoint
- Track - creating a track
- Following - using tracks or the "track back" feature

Navigating Around an Obstacle - use perpendicular angles off your original route and counting paces to and from a parallel bearing to "cut the obstacle out" of your pathway

MTN 3.2

EXPEDITION BEHAVIOR

These are a suite of behavioral concepts developed primarily by NOLS. They describe how a group cooperates to attain goals in an expedition length mountaineering setting.

- Serve the mission and goals of the group
- Be as concerned for others as you are for yourself
- Treat everyone with dignity and respect
- Support leadership and growth in everyone
- Respect the cultures you contact
- Be kind and open-hearted
- Do your share and stay organized
- Help others, but don't routinely do their work
- Model integrity by being honest and accountable
- Admit and correct your mistakes

Evacuation Considerations

- Walk out or carry out?
- Does your party require outside assistance?
- Everyone or just the evacuation party?
- Communication: radios, emergency locator beacons, or in person messengers?

Helicopter Rescues

- Safety first
- Make the party visible
- Prepare the area

MOUNTAIN WEATHER

Know the Forecast and Get Updates
Know Patterns for Wind and Precipitation
Ongoing Observation is Key to Prediction
Barometric Pressure

- Rising: Conditions are improving - high pressure will keep storms and precipitation away
- Falling: conditions are worsening - low pressure will allow storms and precipitation to arrive

Major Indicators of An Approaching Storm

- Changes in cloud cover
- Changes in air pressure
- Changes in wind direction
- Changes in wind speed

Know the Freezing / Snow Line

Principles of Managing Avalanche Risk

- Check the forecast!
- Plan the route in safer terrain
- Know how to recognize and monitor conditions in avalanche terrain

MEDICINE FOR MOUNTAINEERING

Training: Wilderness First Responder (WFR) and Wilderness First Aid (WFA)

Altitude Issues

- AMS - Acute Mountain Sickness
- HAPE - High Altitude Pulmonary Edema
- HACE - High Altitude Cerebral Edema

Heat and Cold

- Exposure
- Frostbite / Frostnip
- Hypothermia
- Heatstroke

Common Issues

- Sunburn
- Blisters
- Cuts, Scrapes
- Exhaustion
- Illness

Less Common, But Possible Issues

- Trauma
- Lightning

- Fuel or hot water burns
- Panic and anxiety
- Snow Blindness

Considerations Above 12,000'

- Altitude issues begin to arise - acclimatization is necessary
- Dehydration is heightened, even in cold temperatures
- In the Sierra, this is above timberline - which means weather, temps and wind will be different

ALPINISM

Alpinism = "Modern Style" Mountaineering

Historic "Siege Style" Mountaineering

- Large scale assault using fixed camps, fixed lines, and infrastructure to put a "summit team" on top
- Heavy, expensive, top-down
- Likely to succeed given enough time, people and supplies

Modern "Alpine Style" Mountaineering

- Lightweight, small teams carrying everything on their backs, climbing in one push without resupply
- Requires commitment, high degree of experience and technical proficiency
- Difficult to succeed unless weather, conditions, and team are all in alignment

PEAK CLIMB

During the course, teams will climb and descend a technical mountain route involving both snow and rock, in alpine style, spanning 24-36 hours. Included in the experience will be a bivouac in the snow, fixed lines or roped climbing as a team, as well as advanced navigation and route finding.