SMC Rock Climbing Level 3 Training Course Syllabus

RCK 3.1

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

ORIENTATION
Meet and Greet Activity
RCK 3 Learning Objectives
- Build on the foundation of RCK 2
- Add to existing core knowledge
- Learn technical skills for intermediate terrain
- Cultivate expedition behavior (p. 470)

ORIENTATION AND SAFETY
Welcome and orientation to the crags
Safety and safe zones
In case of emergency

LEAD CLIMBING BASIC SKILLS (p.255-275)
Sport Leading vs. Traditional Lead Climbing
Team Tie-in
Leading Climbing Sequence:
1. Know the route (p. 262-263)
2. Establish personal safety at the best location
3. Establish anchor
4. Stack the rope
5. Establish the belay (FPAC)
6. Visualize the ascent: route, hazards, considerations (p.264)
7. Select types and amounts of protection and equipment (p.258)
8. Communication / signals (p.183)
9. Protect the belay (p.159,264)
10. Lead route, placing protection (p.264-270)

Racking Options (p.259-262)
- Harness gear loops / pack
- Gear slings and options
- Hybrid

Racking Procedures
- Protection
- Quickdraws, single and double slings
- Cordellettes
- Carabiners
- Miscellaneous / rescue gear
- Personal vs. team gear

Protecting the Belay (p.264)
Clipping Technique (p.265)
Discussion: Decisions regarding protection (p.264-265)
- How often should I protect?
- Which type of protection should I choose?
- Where on the route should I protect?
- Is it "good enough" to withstand maximum forces here?

On-Route Considerations For Leaders (p.264)
- Current likelihood of a fall
- Consequences of a fall
- Protecting cruxes and traverses (p.268)
- Avoid rope drag (p.266)
- Judging direction of fall forces (p.267)
- Avoid a pendulum (p.269)
- Time being consumed vs. time allotted
- Fall factors
- Rock quality and available features
- Aesthetics of the experience

Cleaning The Route (p.271)
- Perform your duties as efficiently as possible
- Retrieve gear carefully and quickly
- Rack the gear to facilitate transfer

1: SINGLE PITCH LEAD CLIMBING PREP
Rope teams practice lead climbing to an established anchor point, then lower down, clean protection and exchange roles.

2: SINGLE PITCH LEAD CLIMBING WITH TRANSITION PRACTICE
Rope teams practice full lead climbing from the ground up on selected routes up to 5.6, complete with building a multi-point anchor and bringing up the second. Then they will work through the transition - what will they do next if they were to continue climbing from that point? Then lower, rappell, or walk off, depending upon need and time constraints. Switch roles and repeat.

ROCK CLIMBING TECHNIQUE
Off-width crack climbing
Climbing through a roof
Flagging / Counterbalance
Dihedrals
Climbing rock with ice axes or tools
Climbing rock in crampons

RCK 3.2

ORIENTATION AND SAFETY
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MULTI-POINT BELAY ANCHORS OVERVIEW
Forces Inherent in Rock Climbing (p.157-159)
- Dynamic vs. Static forces
- Ropes: Diameters, UIAA Falls, Impact force
- Kilonewtons: carabiners vs. protection vs. slings
- Angles and forces (p.176-178)
- Common failure points discussion

Assessing Anchors: SERENE and EARNEST (p.170)
- SERENE = Solid, Equalized, Redundant, No Extension
- EARNEST = Equalized, Applicable, Redundant, No Extension, Solid, Timely

Solid
- Maximize contact and angle of loading
- Maximize features of the anchor pieces
- Utilize highest quality rock or natural

anchors available
- Assess collective strength of anchor
- "Minimum" pieces for a strong anchor
- Discussion: How strong is strong enough?

Equalized (p.172-178)
- Dynamic / Self-equalized / "Magic X": unlimited sliding equalization, but potential for extension and shock loading (p.174-176)
- Static / Pre-equalized / Figure 8,9,10: pre-equalized in a single direction only, but protected against extension and shock loading (p.172-174)
- Hybrid: limited sliding equalization and limited protection against shock loading (p.176)

Redundant
- Limit single point failure potential
- If you aren't sure...then you are sure (you need a backup)
- Ability to monitor the anchor affects redundancy choices (e.g. top roping)
- Ask the question, "what if..." then build accordingly

No Extension
- Discussion: Why do single point anchors "blow out?"
- Understanding and preventing shock loading

Additional Factors from EARNEST
- Applicable: the best choice given the needs of the situation
- Timely: in the correct location, quick to build and take apart

Rigging
- Using a cordellette
- Using slings
- Using the rope
- Hybrid rigging

MULTI-PITCH ROCK LEAD CLIMBING SKILLS OVERVIEW (p.255-275)

Discussion: Single Pitch Rock Lead Climbing vs. Multi-Pitch Alpine Lead Climbing?

Team Tie-in, Options
- Team of 2 vs. team of 3
- Rope length, diameter and type selection
- Single, Double, or Half Ropes
- Kiwi Coil / Short Roping

Multi-Pitch Lead Climbing Sequence:
11. Know the route (p. 262-263)
12. Establish personal safety at the best location
13. Establish anchor (SERENE, EARNEST)
14. Stack the rope
15. Establish the belay
16. Visualize the ascent: route, hazards, considerations (p.264)
17. Select types and amounts of protection and equipment (p.258)
18. Communication / signals (p.183)
19. Protect the belay (p.159, 264)
20. Lead route placing intermediate protection (p.264-270)

Racking Options (p.259-262)
- Harness gear loops / pack
- Gear slings and options
- Hybrid

Racking Procedures
- Protection
- Quickdraws, single and double slings
- Cordellettes
- Carabiners
- Miscellaneous / rescue gear

Protecting the Belay (p.264)

Hanging Belays

Protecting a Traverse

Clipping Technique (p.265)

Discussion: Decisions to make in placing protection (p.264-265)
- How often should I protect?
- Which type of protection should I choose?
- Where on the route should I protect?
- Is it "good enough" to withstand maximum forces here?

On-Route Considerations For Leaders (p.264)
- Current likelihood of a fall
- Consequences of a fall
- Protecting cruxes and traverses (p.268)
- Avoid rope drag (p.266)
- Judging direction of fall forces (p.267)
- Avoid a pendulum (p.269)
- Time being consumed vs. time allotted
- Fall factors
- Rock quality and available features
- Aesthetics of the experience

Cleaning The Route (p.271)
- Know your responsibilities and do it as quickly as possible
- Retrieve gear carefully and quickly
- Rack the gear to facilitate transfer

TRANSITIONS

Discussion: Why is this such a critical point?

Factors at the transition between pitches:
1. Transferring the rack
2. Transferring the belay
3. Transferring the lead
4. Modifying the anchor for an upward pull
5. Transitioning to a lower or a rappel
6. Need for physical / psychological rest
7. Need for water / food / clothing
8. Need for information or decision making

Solutions:
1. Transferring the rack: decide and use the most effective method as a team
2. Transferring the belay: build it so no modification is needed, or it can be done in less than 30 seconds
3. Transferring the lead: One leader only, or lead in blocks. If you must swing leads, practice the transition
4. Modifying the anchor: build a multi-directional anchor
5. Transitioning to a lower or a rappel: practice before attempting the route
6. Need for physical / psychological rest: better mental and physical training
7. Need for water / food / clothing: climb within limits and within flexible systems that can be "adjusted on the fly"
8. Need for information or decision making: study the route beforehand, use radios, and make decisions before starting the route

RCK 3.3

ORIENTATION AND SAFETY
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COMMON ALPINE ROCK CLIMBING TECHNIQUES
Cracks
Stemming
Chimneys
Dihedrals
Climbing rock with ice axes or tools
Climbing rock in crampons

MULTI- PITCH ALPINE ROCK LEAD CLIMBING SEQUENCE

1: SINGLE PITCH LEAD CLIMBING
Rope teams practice full lead climbing from the ground up on selected routes up to 5.6, complete with building a multi-point anchor and bringing up the second.

2: MULTI-PITCH LEAD CLIMBING
Rope teams practice full lead climbing from the ground up on selected routes up to 5.6, complete with building a multi-point anchor and bringing up the second. Both team members continue on for at least another pitch, up to three more pitches if time allows. Both team members then lower or rappel off, depending upon circumstances and desire for practice.

3: MIXED CLIMBING
As appropriate for individuals and available conditions, practice climbing on top-rope or leading in moderate (up to 5.6) mixed conditions where climbers can climb rock, snow and/or ice on the same route, with crampons and ice tools.

RAPPEL ANCHORS AND PROCEDURE OVERVIEW
Rappel Anchors (p.190-192)
- Location
- Strength vs. disposability
- Backups?

The Sequence of Procedures: (p.188-207)
1. Establish personal safety at the best location (p.195)
2. Assess existing rappel anchor options
3. Establish an appropriate rappel anchor (p. 190-192)
4. Attach, stack and throw (or carry) the rope (p.192-196)
5. Visualize the descent: route, hazards, considerations (p.200)
6. Select types and amounts of protection and gear for the next anchor (p.204)
7. Choose rappel method, if device back up with friction hitch (p.196-200, 204-206)
8. Guard against rappelling off the ends (p.205)
9. Rappel in control to next anchor (p.201-204)
10. Communicate when down (p.204)
11. Pull the ropes (p.206-207)

LOWERING PROCEDURE OVERVIEW
Anchors for Lowering
- Location
- Strength vs. disposability

The Sequence of Procedures:
1. Establish personal safety at the best location (p.195)
2. Assess existing anchor options for lowering and establish the anchor
3. Affix the rope through anchor and stack it
4. Establish the lower with a re-direct and/or friction hitch back up
5. Select types and amounts of protection and gear for the next anchor, if needed, and send with climber
6. Lower from above, in control
7. Monitor the middle of the rope - stop there or before.
8. Climber communicates when down and at or establishing next anchor.
9. Choose rappel method and back up with friction hitch (p.196-200, 204-206)
10. Guard against rappelling off the ends (p.205)
11. Rappel in control to next anchor (p.201-204)
12. Pull the ropes

RCK 3.4

ORIENTATION AND SAFETY
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KNOTS
- Figure 8 on a Bight
- Clove Hitch
- Munter Hitch
- Munter Mule
- Prusik Hitch
- Autoblock
- Klemheist

ANCHOR AND BELAY CONFIGURATIONS
Multi-point belay anchor review
- ERNEST
- Considerations for escape

Belay Configurations
- Belaying the leader
- Belaying the follower on the anchor
- Belaying the follower on the harness

ESCAPING THE BELAY
1. Securing the climber
2. Transferring the load
3. Escaping the belay

MOVING TO THE INJURED
Ascending a fixed line
Descending a weighted line
Self belayed climbing

RECOVERING THE INJURED
Lowering an injured climber
Hauling an injured climber
Rappelling with an injured climber