BRRRG BASIC CLASS
Session #2: ROPEWORK
OUTLINE (SHORT)

I. INTRODUCTION
A. HISTORY OF ROPEWORK AND USES
   1. Changing attitudes towards mountains in late 1800's: interest, casual thermo
   2. Early use of rope by climbing guides to pull up clients, guides paid by successful ascents
   3. "Belaying": wrap the rope around a rock, if someone should fall (early)
   4. Modern belaying
   5. Rappelling
   6. Prusiking
   7. Refinement of static rope techniques by cavers
      1. Cable Leaders
      2. Development of "single rope techniques"
      3. Development of vertical caving gear
         Rappel Racks, Giros, 3-cam Rigs, Static Rope

B. SAFETY AND CALCULATED RISKS
   1. "Level of Risk" concept: Risk/assurance it's worth to continue
   2. "A dead rescuer never did anyone any good"
      Importance of safety procedures in non-rescue; non-rescue must be safer than rescue!
      a. Bad workman or fashioned excursions
      b. Multiplication of rescue problems due to Blake, 1963

   3. Rules
      a. Harness and gloves when necessary
      b. 2nd check

C. ROPE, HARDWARE, AND PERSONAL EQUIPMENT
   1. Rope and webbing: Table I (materials) Table II (construction)
   2. Care of nylon rope + webbing
      a. Cutting + Sealing
      b. Color Coding
      c. Uncoiling + Stacking
      d. Coiling: Speed coil, Lap coil, Mountainer's coil, rescue coil (modified skin coil), chain coil, tying off a coil
      e. Storage: Hang up, use rope bag, avoid oil, treat wounds, hot cars, snow, etc.
3. CARABINERS
   a. MATERIALS
   b. TYPES AND RELATIVE STRENGTHS: GATES & AXES STRESSES
      c. GATE-OPEN VS. GATE-CLOSED STRENGTH
      d. MAINTENANCE, CARE, RETIRING

4. SEAT HARNESS
   a. "SWISS SEATS" b. ASRE SEAT c. SEWN SEATS

5. OTHER EQUIPMENT
   a. HELMETS (SIDE PROTECTION, TOP IMPACT PROTECTION, ADJUSTMENTS, LAMP BRACKETS) CABLE SLEEVES
   b. GLOVES (LEATHER, PROVISION FOR CLIPPING TO BINDE)
      c. FOOTWEAR (SUPPORT)
      d. CLOTHING (LEGGING, NO LOOSE ROPE)

II. KNOTS

A. GENERAL CHARACTERISTICS & CONSIDERATIONS
   1. TERMINOLOGY: STANDING END, RUNNING END, BIGHT, LOOP
      CENTERING, BACKING UP, STANDING END TO THE OUTSIDE
   2. PRINCIPLES: KNOTS VS. HITCHES; KNOT/BIND LOOP KNOTS;
      STRENGTH, SECURITY, PREFERENCES TO STANING
   3. PROBLEMS & SAFETY PROCEDURES
      a. SLIPPING -> TIGHTEN + LONG RUNNING ENDS + EXCESSIVE BACKUP
         (NOT HALF-HITCH)
      b. IMPROPER KNOT: KNOW KNOT STRENGTHS & CHARACTERISTICS
      c. IMPROPER TIED: DOUBLED CHECKS, PRACTICE TIES.
B: SPECIFIC KNOTS

1. OVERHAND KNOT
2. OVERHAND BEND (WATER KNOT, RING BEND)
3. FIGURE EIGHT KNOT (BEND LOOPS)
4. SQUARE KNOT (REEF BEND)
5. CLONE HITCH
6. PRUSIK KNOT
7. TAUROLINE HITCH (DUTCH HITCH)
8. BOWLINE
9. BOWLINE ON A COIL
10. BUTTERFLY
11. HEADPIN

III. ROPE HANDLING AND ANCHORING

A. RIGGING A SIMPLE STATIC LINE
   1. USE OF TREE WRAP
   2. PADGING
   3. THROWING

B. ANCHORING
   1. TYPES OF ANCHORS: PITONS, CHECKS, BOLTS, ROCKS, OVERHANGING TERRAIN, NATURAL CHOSES...
   2. STATIC RIGGING: WANT TO IF ABLE TO USE MORE THAN 1 ANCHOR
      a. DISTRIBUTION OF STRESS AMONG ANCHORS
      b. AVOID SHOCK LOADS IF I SHOULD FAIL
   3. USE OF SLING TO "EQUALIZE" 2 ANCHORS (FIG. 1)
   4. USE OF 2 SLINGS TO AVOID SHOCK LOADING IF I SHOULD FAIL (FIG. 2)
   5. IMPORTANCE OF TIE-IN ANGLE
   6. GIRTH HITCH
   7. DOUBLED RUNNER (DOUBLE RUNNER WITH WRAPS)
IV. RELAYING

A. THE SITTING HIP RELAY
   1. THEORY OF THE BOAT (GENERAL)
      1. THE STANCE
      2. THE TIE-IN (a) TIE-IN NEW (b) TIE-IN IN LINE
      3. ROPE LOCATION RELATIVE TO TIE-IN
      4. GLOVES
      5. "BOX AROUND BODY! PROHIBITED HAND POSITIONS" WHY?
      6. DRAWING HAND VS. FEELING HAND
      7. UP ROPE
      8. SLACK
      9. PREVENT A FALL
      10. TIEING OFF A FALL

B. THE TREE RELAY
   1. THEORY
   2. TREE WRAPS
   3. STANCE
   4. ROLE OF THE ROPE HAND-ON, PROPER FINGER POSITIONS
   5. CATCHING A FALL, MOVING AROUND THE TREE
   6. LOWERING OFF A TREE BOAT

C. THE MUNIZ HITCH
   1. THEORY
   2. PIGEON HITCH
   3. STANCE
IV. ASCENDERS

A. General considerations
   1. Safety: Use a boundary.
   2. Speed + ease: Prusik style, + well-adjusted rope (both from practice).
   3. Expense vs. ease: Prusik Rlo for $5 vs. Metolius or Cumrope Jrune Jrlo for $125.

B. Ascenders
   1. Prusik (2 + multiple wrap)
   2. Hongden
   3. Mewton others (Junior, Cubes, etc.)

C. Systems

2-0

1. Texas
   a. Bowline on foot; butterfly knot at knee; bowline at seat
   b. Short loop fall seat
   2. Others: Texas "4", etc.
   3. Safety note: True redundancy
   4. Ascending style
   5. Breakovers: use of 3rd ascender + sling

V. RAPPELLING

A. Dangers of rappelling (1) Analysis of the "rigger rappel"
   1. 2. Dangers of "leaping"
   2. Inhibited dangers
   3. Bolting, pro + cons; how both top + bottom

B. Body Rappels
   a. 1. Arm rappel ("French Arm", "Basic Rappel") (For inclined only)
   b. 2. Boot rappel ("Hoist Boot", "Dufrenitz") Note importance on proper placement of rope on body.

C. Mechanical Rappels (Discuss advantages + disadvantages)
   1. Figure 8 (single + double wrap) "foolproof", but may look off "going over" overhangs
   2. Carabiner wrap rappel: quick, little equipment, but twisty rope
   3. 6-Binder Rappel: good, but narrow control range
   4. Double Brakes Bar Rappel: easy, but weak + complicated
   5. Rappel Rack: wide range of control, simple, but bulky
D. RAPPEL STYLE & PRACTICE
   1. General Stations, Foot & Hand Position
   2. Over Loads
   3. Overhandos
   4. Walks & Walk
   5. Free Props
   6. Tying Off
   7. Belaying Mechanics Rappels

VII. PRACTICE (see checklist for practice session)

A. BELAYING