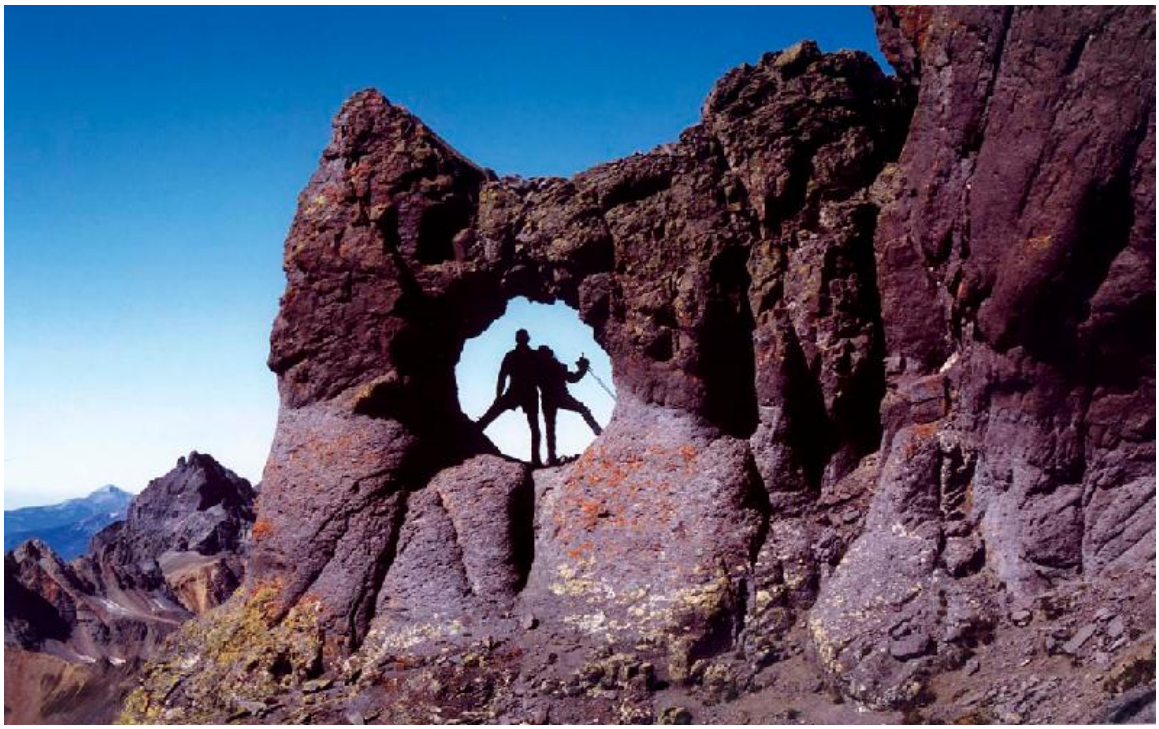
Instructor Supplement to the Wilderness Trekking School Manual



COLORADO MOUNTAIN CLUB SINCE 1912

Denver Group

SCFD
Scientific & Cultural Facilities District

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Teakettle Mountain, Mount Sneffels quadrangle, Ouray County, CO

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Mountaineering is an activity with inherent risks. No class or manual can address every potential situation.

Each participant is responsible for their own safety.

The Colorado Mountain Club, the authors, and the instructors do not assume any liability for injury, damage to property, or violation of the law that may result from the use of the WTS manual.

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CURRENT SESSION INFORMATION

Dear Instructor,

Welcome back to Wilderness Trekking School and THANK YOU for volunteering your personal time to share **your** skills and experience with us.

Whether you are an experienced senior instructor, a first-time assistant instructor, or an experienced assistant instructor, I hope to keep you interested, challenged, and contributing positively to the growth of the students and the school program. It truly is your generosity with your time, knowledge, and spirit that keeps this school flourishing.

I see WTS as not only a program for training students in mountaineering skills, but also as a development opportunity for everyone involved in the continued existence and value of this school. It takes a unique balance of ability, knowledge, organization, and skill to teach others mountaineering basics. Sensitivity to human feelings and needs also encourages a positive learning experience. You have these qualities within you; I hope to raise your awareness of these factors and help you learn effective ways of interacting with others to ensure the success of this session.

You have your own unique talents, qualities, experience, and wisdom. I truly hope you will share these with us so we can all benefit from your participation in the school. You can be interactive in the program, and I hope you will speak up. We base the future of the school on your ideas. PLEASE complete the online survey WTS Course Evaluation by Instructors.

I hope you find your continuing experience with WTS to be fun, challenging, and full of variety. Let us lead by example, train them well, and keep them coming back!

I would like to thank several of our WTS Master Instructors including Norm Arlt, Chuck Barnes, Dave Callais, Tim Musil, Jack Reed, Nick Weighton, and Doug Werner for the material, ideas, and suggestions they so generously provided for this project. Their excellent contributions became the foundation of this edition of the Instructor Supplement to the WTS Manual.

Sincerely,

Joe Griffith
Director, Wilderness Trekking School

TRIP LEADER RESOURCES

CMC has compiled leader resources–including scholarship applications, report forms, LIT forms, and safety information–on the CMC website at Trip Leader Resources.

Scholarships & Financial Assistance are available for all in-house Denver Group courses. See application. The Eckert Roder Leadership Scholarship program provides funds for the state-led Wilderness First Aid (WFA) course.

ELECTRONIC RESOURCES

See WTS Overview or WTS Fall 2026 for information. Click on Course Materials on either page for listing of links to the videos and articles that form the backbone of the course. Log in to see the Instructor Information link in red at the bottom of the page. This page has links to the Instructor Supplement, teams, schedule, forms, map library, and other helpful files. You may also access WTS resources at CMC.org by selecting the COURSES–*LEARN OUTDOOR SKILLS* dropdown list, selecting HIKING, and clicking on FIND COURSES.

CMC CODE OF CONDUCT

All people participating in CMC activities are expected to treat all others with respect and concern. The Colorado Mountain Club will not tolerate abusive, sexually harassing, or discriminatory actions or communications. Anyone experiencing or witnessing such behavior is invited to submit a report to our third-party system for investigation. Consequences of inappropriate behavior may include a verbal warning, written warning, suspension, or expulsion from the CMC.

CMC uses NAVEX EthicsPoint for behavioral incidents from minor grievances, to bullying, unethical behavior, or sexual harassment. See INCIDENT REPORTING. Senior instructors must file an online report concerning student issues at NAVEX EthicsPoint or report anytime toll-free 1-844-929-4258.

SURVEYS AND EVALUATIONS

Please review these early in the session to determine what factors WTS emphasizes.

WTS Instructors' Survey of Course

You will receive a link to this survey via email just before the last group meeting to verify email addresses. Please be sure all your students have received their survey email and wait to complete the survey until AFTER the Graduation Hike. You will receive several reminders. This survey is due the Saturday before Appreciation Night, whether or not Snow Day has occurred, so that we can report the results to you.

Other Evaluations

See the WTS Instructor Information page (must log in to see) on CMC.org for both online and downloadable forms. See details in the **Tracking and Evaluating Performance** section in Chapter 1 – Senior Instructor Responsibilities. These are due at course end (See schedule.)

Evaluation – Students by Instructors
Evaluation – Assistants by Senior Instructors
Evaluation – Senior Instructors by Assistants

WTS SCHEDULE – FALL 2026

Date	Time	Subject
Before meeting 1: View video – **Gear and Hygiene**, from link on Course Materials.		
Tue, Sep 8	6:30 – 7:00	Check-in to group meeting room
	7:00 – 9:30	Group Meeting – discussion of Basic Equipment for Hiking and Personal Hygiene, LNT, etc.
No Field Day this week		
Before meeting 2: View video – **Navigation**, from link on Course Materials.		
Tue, Sep 15	6:45 – 7:00	Check-in to group meeting **Section I homework due**
	7:00 – 9:30	Group Meeting – discuss Navigation, plot points, etc.
Field Day 1: Dry Land Travel Thu, Sep 17, Sat, Sep 19 or Sun, Sep 20		Time and Location TBD by instructors
Tue, Sep 22 (optional tutoring) 6:30 – 9:30 – **Navigation Tutoring**		Joe Griffith
Field Day 2: Navigation Day Thu, Sep 24, Sat, Sep 26 or Sun, Sep 27		Time and Location TBD by instructors
Before meeting 3: View video – **Emergency Situations**, from link on Course Materials.		
Tue, Sep 29	6:45 – 7:00	Check-in to group meeting **Section II homework due**
	7:00 – 9:30	Group Meeting – discussion of Emergency Situations, Incident Management, start Grad Hike planning, etc.
Before Field Day 3: View video **Survival Field Day**, linked from Course Materials.		
Field Day 3: Survival Day Thu, Oct 1, Sat, Oct 3 or Sun, Oct 4		Time and Location TBD by instructors
Before meeting 4: View video – **Weathe**r, from link on Course Materials.		
Tue, Oct 6	6:45 – 7:00	Check-in to group meeting **Section III homework due**
	7:00 – 9:30	Group Meeting – discuss Weather, continue planning, etc.
No Field Day this week		
No Meeting on Tue, Oct 13		
Before meeting 5: Complete **Avalanche Aware** course, from link on Course Materials.		
Tue, Oct 20	6:45 – 7:00	Check-in to group meeting **Section IV homework due**
	7:00 – 9:30	Group Meeting – discussion of Snow Travel, complete Grad Hike planning, WTS Wrap-up, etc.
Field Day 4: Grad Hike Thu, Oct 22, Sat, Oct 24 or Sun, Oct 25		Time and Location TBD by **students**
Surveys Due: Sat, Oct 31 at midnight		WTS Course and Instructors Surveys online
Field Day 5: Snow Travel Day Thu, Nov 12, Sat, Nov 14 or Sun, Nov 15		Time and Location TBD by instructors

WTS 2026 Schedule-Fall V6.docx

Other Important Dates & Times – Fall 2026

Tue, Sept 1 **Instructor Orientation Night at CMC**
Time: 6:00 pm – food provided

Tue, Sept 1 **Student application deadline; tuition increases after this date.**

Tuesday Meetings: **6:30 pm: Optional instructor team meeting**

7:00 pm to 9:30: Group meeting with students

Sat, Sept 5 **Instructor Navigation Exercise**
Time and Location: TBA

Tue, Oct 20 **WTS Surveys open.** At your last evening meeting, please verify that all received the links. Please do NOT complete until AFTER the grad hike. There will be reminders.

Sat, Oct 31 **WTS Surveys CLOSE** at midnight for students and instructors
Happy Halloween!

Tue, Nov 3 **WTS Appreciation Night at CMC**
Time: 6:00 pm – food and drink provided
Tue, Nov 3 6:00 pm – Helmet check-out

Sat, Nov 7 **Instructor Snow Travel Exercise at Loveland Pass**
Time: 6:30 am at CMC or 8:00 am at summit of Loveland Pass
(May be delayed due to lack of snow)

Tue, Nov 24 6:00 pm – Helmet check-in

Fri, Dec 4 **Evaluations of Students and Co-Instructors due**
Fri, Dec 4 **Official end of WTS Fall session**

Tentative Makeup Field Days

Possible Dry Land Travel makeup day
Sat, Oct 10 Time: TBD

Possible Navigation makeup day
Sun, Oct 11 Time: TBD

Possible Survival makeup day
Sat, Oct 17 Time: TBD

Possible Grad Hike makeup day
Sat, Oct 31 Time: TBD

Possible Snow Travel makeup day
Sat, Nov 21 Time: TBD

Tentative **WTS Spring 2027 Schedule**

REVISIONS TO WTS SUPPLEMENT & MANUAL – FALL 2026

This is a list of the significant edits to the manual, with emphasis on topics your students might raise. There are also minor edits that are not listed.

WTS INSTRUCTOR SUPPLEMENT

MAJOR UPDATE – Coordinated these two sections

WTS Field Emergency SOP

Chapter 3 – Emergency Procedures,

Pp. 10-11, SOP is a detailed checklist. Includes:

- **Recommend** that students carry contact information and hours of operation for their in-network primary and emergency care facilities.

Pp. 23-24, Overview, added information on communications and medical facilities, including Trama Care Centers.

Chapter 4 – Teaching Guidelines

Pg. 25 – Added note on handling Zoom Classes and link to helpful PowerPoint.

CHAPTER 6 – DRY LAND TRAVEL FIELD DAY

Pg. 38, Added note to discuss the importance of having a trip plan.

Chapter 12 – Backcountry Incident Management

Pg. 59, Updated Backcountry Incident Management Process to better match BIMS.
Pg. 60, Updated Patient Assessment to better match BIMS.

WTS MANUAL

Current Session Information

Pg. 4, WTSC contact information is spaced to decrease the likelihood of its being scraped and used for spam or phishing.
Pg. 5, Enhancing Your Learning with Digital Text has greatly expanded tips for viewing and engaging with digital text in Adobe Acrobat Reader.
Pg. 8, Added "Carry contact information and hours of operation for your in-network primary and emergency care facilities."
Pg. 13, Wordsmithed Objectives. Added consider bringing a magnifier and a headlamp on Navigation meeting night.
Pp. 15-16, Map Points: Wordsmithed, added Long Scraggy Map Points and Plan Route tables.

Chapter 6 – Colorado Wildlife

Pg. 46-47, Updated Colorado Parks and Wildlife safety tips for observing wildlife, a much more extensive list than before.
Pg. 47, Added CPW's rule of thumb.
Pg. 49, Added link to CDC's Tick Bite Guide for removing ticks.
Pg. 50, References, Updated and added references, including How Not To Be a 'Touron.'

Chapter 9 – Mountain Navigation By Map And Compass

Pg. 72, Added image of semi-circle protractor to distinguish from angle finder.

Navigation Addendum

Pg. 85, Added Google assesses trails like paved paths in city parks.

Chapter 10 – Survival Field Day

Pg. 90, added "Carry contact information and hours of operation for your in-network primary and emergency care facilities."
Pg. 92, Added many details to Signaling information.
Pg. 93, Added information to Helicopter Rescue.

Chapter 12 – Backcountry Incident Management

Pg. 101, revised links to BIMS cards and described sources.

Chapter 13 – Survival

Pg. 102-103, Added information to the Hypothermia and Outdoor Survival text.
Pg. 107, Clarified differences between PLBs and satellite messengers.

Chapter 14 – Wildfire

Pg. 108, Added **CoTrip**, Includes wildfire in Travel Alerts.

Chapter 15 – Medical Emergencies

Pg. 118, Added link to free Official American Red Cross First Aid app.

Chapter 17 – Avalanche

Pg. 119, Added: **Beginner Snowshoe School** – Free, one-day class with equipment supplied.
Pg. 131, Added reference **Snow Pool** – CAIC's collaborative research project to improve avalanche safety communications.

WTS Field Emergency SOP

General Procedures

- **Nearby Medical Facility** – BEFORE the field day, senior instructor determines capabilities, hours of operation, phone number(s), and driving directions to the medical facilities (urgent care, emergency room, and hospital) that are closest to the field day site in event of an emergency.
- **Recommend** that students carry contact information and hours of operation for their in-network primary and emergency care facilities.
- **Non-medical Emergency –** Senior instructor assumes leadership and secures the site.
    - If outside support is needed, senior prepares data about the group's GPS coordinates, status (number & condition of hikers, injury descriptions, actions taken), and intentions, then notifies local authorities.
    - Call WTS Director, Joe Griffith 303-887-8741 (c) 303-984-1883 (h) as soon as the immediate situation is under control. If necessary, leave a message.
- **Medical Emergency or Death**
    - Senior instructor (or next in seniority) assumes leadership and secures site. If outside support is needed, senior oversees data collection about the team's GPS coordinates, status, and intentions. Consider taking photos.
    - Medical leader and assistant triage and start treatment. If outside support is needed, they complete Patient Assessment form and start Emergency Report form for Get Help team.
    - Bivy team provides help in moving patient(s), temporary or overnight shelter, water, nutrition, and fire as needed.
    - If outside support is needed, Get Help team notifies local authorities with all appropriate data and may flag route and guide responders to site.
- **Survival Situation**

  When the group cannot get safely back to the trailhead that day, the best-qualified person assumes leadership. Survival leader assesses situation, develops a plan and organizes the team.

Emergency Communications

If in cell phone range, call or text **911**. To preserve cell phone battery, use Airplane Mode routinely in the backcountry and consider carrying a power bank. Set battery to Power Saving or Emergency mode if needed. Personal locator beacons (PLBs) and satellite messengers may alert rescue or even provide message communication. Send

Get Help team if verbal conversation or guidance to the site is needed. For nonemergency, call Sheriff Dispatch number first.

CMC Emergency Notification Procedures

If you call for outside help, also call **CMC Emergency 269-384-1056** as soon as the immediate situation is under control. They will call the patient's contacts and WTS Director.

- Carry or access the CMC Emergency Contact Information For Trip Leaders Card.
- Complete the online CMC Incident/Injury/Illness and Near Miss Report within 48 hours.

Media Response

If the press approaches you, simply say that they need to speak with the designated CMC media spokesperson, who will answer their questions as soon as possible. Do not speculate or answer questions from the press.

Make-up Policy

To graduate from the Wilderness Trekking School, students must view all lecture videos, attend all group meetings, and take part in all required field days.

Lecture Videos – Students can link to videos from the Course Materials page, Lecture videos link. We trust students to view all videos prior to the relevant group meeting.

Group Meetings – There isn't a practical way to make up a missed group meeting. If student misses more than two group meetings, they will need to retake the course.

Field Days – Students who miss one field day due to an emergency may get credit for a single field day by attending a make-up field day. Make-up field days will be held during the current session, subject to instructor availability. The missed field day may also be taken during the next two WTS sessions without charge or with Day Hiker School. If they miss more than one field day, they will need to retake the course.

Senior instructors have the option of swapping students with other field day groups IF THEY CHOOSE. Groups must stay within size limits and the substitute instructor must report attendance and results back to the original instructor. Students are not notified of this option and should not presume it.

Online WTS Course Surveys

Both students' and instructors' surveys open on the last group meeting night and close at midnight the Saturday before Appreciation Night. Please wait until AFTER the Graduation Hike to complete surveys. (During fall sessions, surveys close **before** Snow Travel Day so that we can report results to you.)

Please provide your comments and ratings of WTS through the online instructors' survey. The survey is anonymous unless you choose to leave your name. We will send you email notice and reminders with the link.

The WTS Committee receives a summary of all data and EVERY comment that you write. WTSC values your feedback to facilitate continuing improvement of the course.

We ask students to rate Instructors on these factors:

1) Sufficiently knowledgeable in mountain travel skills,

2) Effective presentation and communication skills,

3) Encouraged participation and interaction in your group,

4) Kept the session on track in terms of stated objectives and expectations,

5) Overall, was effective.

Access to Public Land

The CMC uses land controlled by many different agencies at all levels of government. Each agency has its own rules, which we summarize here. We will need to know where you will be conducting your field days as soon as possible in the session. After a field day

in any of these areas, the instructor team must report the number of students and instructors to the WTS Director.

Jefferson County Open Space

We use Jeffco Open Space parks for Dry Land Travel, Navigation, Survival, and Grad Hike. The senior instructor must carry a general use permit. We no longer obtain campsite permits for Survival. Because of the large numbers of visitors, the parks are strictly enforcing new rules and fines. It is unlawful to attach anything to a live tree, to set up a temporary shelter such as a tarp, to start any fire, to smoke or vape except in a closed vehicle, to gather or possess any part of any animal, vegetation, rock, wood, or any other object. The maximum group size is 14. The senior instructor must have a special permit tag, which will be distributed before the field day and must be returned at the end of the session. Only one CMC group may be in a Jeffco Open Space Park at a given time. Club hikes now require a permit.

Boulder Open Space Mountain Parks

NCAR, part of BOSMP, is typically used for Dry Land Travel. The senior instructor must carry a permit, which we usually distribute on the first or second group meeting night. The maximum group size is 16. Many BOSMP trailheads have a $5 parking fee, but NCAR remains No Fee.

Colorado State Parks

Field days in a state park require a permit. There can be a maximum of 10 students per instructor, but there is no maximum group size. At least one instructor must have WFA.

> **Staunton State Park** allows only limited off-trail hiking. Permits are available to hike off Old Mill Trail to private property adjacent to the park. A grill and transportation back to the Staunton parking lot will be available. The group may not reenter the park from private land.
>
> **Golden Gate Canyon State Park** grants WTS permits in spring, but not in September, October, or on November weekends because of heavy park use in the fall. Permits may be available for November weekdays.

US Forest Service

We have USFS permits for Snow Travel at St. Mary's Glacier (weekdays only), Loveland Pass, and Berthoud Pass. The maximum group size is 16.

Rendezvous Property

The school director coordinates access to this land through the CMC Program Coordinator. See page for details and reservation request.

City of Golden Parks and CMC Property

If local fire restrictions allow, the fixed grills at parks or portable grills at CMC may be used for fire starting demonstration and practice.

Overview and History

The heart of this program is you – the instructor – charged with fulfilling the WTS mission.

Wilderness Trekking School's mission is to educate CMC members in a supportive environment to become competent, confident and safe backcountry day hikers in the Colorado mountains.

History of Wilderness Trekking School

The Wilderness Trekking School began in the early 1970s with 30-40 students, eight instructors, and a curriculum that included topics that we currently cover on Dry Land Travel, Snow Travel, and Navigation field days. Originally, the instructors taught both WTS and Basic Mountaineering School (BMS). The core of the schools was the same, with the BMS students staying a little longer for training in ropes and technical mountaineering equipment. From that paired school, the Wilderness Trekking School grew into a standalone school for those who want to increase their hiking competency.

In 1988, WTS became a prerequisite to get into BMS and enrollment flourished. The school began training students in ice ax use as part of BMS requirements. At about the same time, WTS incorporated the Graduation Hike, a key event of the course where students demonstrate their skills and knowledge of group dynamics, navigation, and leadership. Also in the 1980s, WTS increased the number of lectures to five nights and added time to each lecture night so that the individual groups could meet and plan trips together. At that time, tuition was only $30 per class, or approximately $1 per hour of each instructor's time.

In the early 1990s, WTS developed an outline of the tasks required to conduct each session, the student waiver process, and the first student manual, a collection of various handouts, which continued to be used for 11 years. Later in the 1990s, WTS added time to each lecture night so that the individual groups could plan their Graduation Hike. In the early 2000s, WTS added Instructor Training Night, Instructor Navigation Day, and a mentor program to form stronger instructor teams. The focus returned to learning skills, setting goals, and encouraging teamwork, and not simply physical effort. WTS also established a separate website to reach out to more potential students. In Spring of 2008, WTS introduced a completely revised manual.

After missing Spring 2020 due to the COVID-19 pandemic, WTS converted several sessions to online videos instead of lectures, with masked and spaced group meetings and field days. In Spring 2025, WTS added a group that holds class meetings via Zoom.

Through each director's term, we have learned new ways of teaching and working with students and instructors. The directors and instructors have all generously volunteered their time to commit to teaching students the knowledge and skills necessary to make wise choices while traveling in the backcountry.

Director	Tenure
Jon Sudar	1970s
Don Rassmussen	1980s
John Lindner	1982-1988
Rolf Asphaug	1989-1993
Janice Palmer-Lewis	1994-1997
Chuck Barnes	1998-2001
Sue Downey	2001-2003
Jeff Tamburro	2004-2006
Rich McAdams	2007-2008
Joe Griffith	2009-present
Interim – Norm Arlt	2019-2022

SECTION I – INSTRUCTOR RESPONSIBILITIES

CHAPTER 1 – SENIOR INSTRUCTOR RESPONSIBILITIES

OBJECTIVES: Upon completion of this chapter, you will be able to:

- List the qualifications of a WTS senior instructor.
- Implement procedures to help ensure the safety of your students and assistant instructors.
- Identify ways in which you can support your assistant instructors.
- Track and evaluate the performance of your students and assistant instructors.

As a WTS senior instructor, you must support and comply with rules, guidelines, and processes established to protect your safety and the safety of your students, your assistant instructors, the school, and the CMC itself. Chapters throughout this document present the appropriate requirements. This chapter discusses items that are specific to senior instructors including qualifications, safety and risk management, instructor support, and performance evaluation.

SENIOR INSTRUCTOR QUALIFICATIONS

All WTS senior instructors must:

- Be graduates of WTS, Trip Leader School, and Avalanche Awareness School (or request a waiver from the WTS Director)
- Be approved CMC trip leaders
- Have been an instructor for two or more recent WTS sessions
- Be able to attend all field days
- Have received satisfactory evaluations from former students and assistant instructors
- Be eager and able to teach students of all paces and experience levels the skills necessary for safe backcountry travel
- It's strongly recommended to complete the Avalanche Aware course, required for student graduation

MASTER INSTRUCTOR QUALIFICATIONS

Instructors may earn Master Instructor status after teaching six times as a Senior, achieving exemplary evaluations by students and assistants, and approval by WTSC.

SAFETY GUIDELINES

In addition to following the WTS Safety Rules outlined in the WTS Manual, senior instructors must:

- Check local weather forecast, wildfire (e.g., InciWeb wildfire information), flood activity, road, trail, or wildlife closures; fire restrictions; hunting season, etc. that might affect your field day activity.
- Ensure that drivers are aware of CDOT winter regulations and wildlife on the road hazards.
- Know the appropriate emergency phone numbers for each field day location, cell phone coverage, and availability of Text-to-911 (currently not in most of Gilpin nor many SE Colorado counties).
- Keep the group together – go in as a group and come out as a group (The only exception would be in an emergency.)
- Be aware of special health conditions of any member of the group.
- Be aware of members possessing relevant medical and/or emergency experience or expertise (In an emergency, you may appoint any such person as the first aid leader while retaining overall leadership yourself.)
- Continuously monitor your students throughout each field day, watching for any adverse reactions to altitude, weather conditions, exposure, or level of exertion

You have the authority to enforce the above rules as well as any additional safety instructions and measures you deem necessary to ensure the safety of all participants. Do not be afraid to warn and, if necessary, to expel any member who refuses to follow these rules. You may also forbid a participant to attend a field day without adequate, required equipment. You must notify the WTS Director regarding any such incidents.

Important – CMC rules and regulations state that official club trips begin and end at the trailhead. Therefore, the club is NOT liable or responsible for incidents that occur at the meeting location or while traveling to and from the trailhead.

Preventative Actions

- Perform an emergency-preparedness self-evaluation by asking yourself what you would do if faced with any of the following scenarios:
  - One or more members develop altitude sickness? Hypothermia? Frostbite? Heat stroke? Cardiac condition?
  - Minor injury (sprain, minor break) where movement is possible but very slow
  - Major injury (serious break) where person is immobile
  - Sudden change in weather conditions that could impede movement
  - A member (and/or the entire group) becomes lost with no idea of current location
- Determine actions that could have been taken to avoid the above situations:
  - Adequate clothing, footwear, sunscreen, hydration, etc.
  - Adequate first aid and survival equipment, knowledge of how to use it
  - Early start, pacing
  - Knowledge of route, possible bailout options
  - Observation of surroundings, weather patterns

Assistant Instructor Guidance and Support

Instructor teams that are cohesive and supportive of one another will have a more enriching and rewarding teaching experience. In addition, students will sense the relationships between team members, and this can directly affect the entire group's experience as well. Your attitude and actions toward your assistants will make a big difference to their enjoyment of instructing in WTS – and in their interest in coming back and progressing to senior instructor.

You can support and enhance your assistant instructors' teaching experience in a variety of ways:

- Begin the team-building process at the Instructor Orientation meeting by discussing each assistant's goals, expectations, strengths, and weaknesses.
- Ask them how you can best assist and support them in reaching their goals.
- Ask them which subjects they would like to teach to students.
- Plan ahead and share your group meeting and field day agendas with your assistants; give them adequate time to prepare their portions.
- Include your assistants in the decision-making process as appropriate (i.e. discussing locations for field days).
- As their comfort level increases, encourage and challenge them to grow in unfamiliar areas.
- Lead by example.
- Keep the lines of communication open; encourage them to ask questions and express their opinions and/or concerns.

Tracking and Evaluating Performance

Attendance

It is imperative that you keep a record of attendance for your students by completing the student Attendance Record, also linked from Instructor Information page. Students must attend **ALL** group meetings and field days (or make them up in accordance with the WTS Make-up Policy outlined in the WTS Manual) in order to graduate.

This duty is appropriate to delegate to an assistant instructor.

Student Performance Evaluations

You must complete a WTS Evaluation of Student form on the WTS website from the Instructor Information page. This includes their attendance on field days, fitness level, preparation, skill level, teamwork, overall, and whether you recommend them for WTS graduation and teaching.

The WTS Director expects the senior instructor to be the focal point for all evaluations of their students. The senior instructor coordinates with any make-up day instructors to collect the evaluations for those make-up days. If a student officially moves to another group, the new senior instructor assumes this responsibility.

Following the official end of a WTS session, the Director provides coordination to schedule a student wanting to make up a WTS field day in the next two WTS sessions or with Day Hiker School. (**Note:** Only one make-up day is allowed). The make-up day instructor for that future session provides the student's evaluation directly to the Director. The Director also verifies that there are no other outstanding requirements needed for that student to graduate.

If a student from another group joins your group for a field day, you need to inform the student's senior instructor that the student completed the day satisfactorily. This may be done by email or by completing the relevant parts of an evaluation form.

You must inform the Director when one of your students withdraws from the school. Please indicate the reason for withdrawal if known.

Some senior instructors prefer to complete the student evaluation forms by themselves; however, others choose to complete them together with their assistant instructors (perhaps over dinner) according to the team's collective observations. This approach accomplishes several things: it makes the assistants feel valued, it provides them with an opportunity to learn this critical instructor responsibility, and it's fun!

Recommendations for WTS Instructor

There is a question on the student evaluation form asking whether you recommend the student to become a WTS assistant instructor. Some things to consider when answering this question are:

Technical skills – Willingness to support the WTS program
Communication with others – Strengths and weaknesses, areas for improvement
Desire to teach others – Whether you would want him/her assigned to your team
Pace and endurance as needed in the event of a backcountry emergency

Timing

Senior instructors should begin working on their students' evaluation forms as the end of the session nears. This form is available from the Instructor Information page. They must submit their student evaluations to the WTS Director **by the end of the session**. Many students are eager to register for classes that require WTS graduation. Submit forms via email or mail to the WTS Director.

Assistant Instructor Performance Evaluations

Senior instructors must complete a WTS Evaluation of Assistant form for each of their assistant instructors and submit them to the WTS Director. This form is available from the Instructor Information page.

Course Surveys

Please complete the online WTS Course Survey by Instructors and encourage your students to complete the WTS Course Survey and the WTS Evaluation of Instructors as well. See details at Surveys and Evaluations on page 5.

Room Use

Please check the arrangement and timing requirements at your site.

CHAPTER 2 – ASSISTANT INSTRUCTOR RESPONSIBILITIES

OBJECTIVES: Upon completion of this chapter, you will be able to:

- List the qualifications of a WTS assistant instructor.
- Identify the duties and responsibilities of an assistant instructor.
- List the requirements that must be met to become a senior instructor.

As a new WTS assistant instructor, you have the opportunity to solidify the knowledge and skills you acquired in WTS as you begin to share it with others. Returning assistants can refine their teaching style and begin taking on more responsibilities. This chapter discusses your responsibilities to both your students and your senior instructor. It also outlines the actions you need to take to transition to senior instructor.

ASSISTANT INSTRUCTOR QUALIFICATIONS

WTS assistant instructors must be:

- Recent graduates of WTS
- Recommended by their senior instructor
- Eager and able to teach students of all paces and experience levels the skills necessary for safe backcountry travel

DUTIES AND RESPONSIBILITIES

Assistant instructors can aid their senior instructor and contribute to the education and overall WTS experience of their student groups in a variety of ways:

- Attend all instructor training events, group meetings, and field days. If you cannot attend a group meeting, field day, inform your senior instructor immediately so he/she can arrange for a substitute instructor.
- Learn and abide by all CMC and WTS rules, regulations, and procedures.
- Assist your senior instructor with managing student safety always.
- Volunteer to teach at least one topic per field day.
- Review and practice the material presented in *Chapter 4 – Teaching Guidelines.*
- Create a list of contact information (i.e. name, city, phone number, email address) for your students and instructor team for communication and carpooling purposes.
- Maintain the Student Attendance Record form located in *Current Session Information.*
- Grade and distribute the students' quizzes and homework assignments.
- Assist your senior instructor with the completion of the student performance evaluations.
- Complete the WTS Course Evaluation by Instructors available on the WTS website, due the Saturday before Appreciation Night.

Complete the WTS Evaluation of Senior form and submit it to the WTS Director before the end of the course. This form is available on the WTS Instructor Materials page.

Transitioning to Senior Instructor

You will be eligible to become a senior instructor if:

- You have been an assistant instructor for a minimum of two recent WTS sessions
- You have been recommended by your most recent senior instructor
- You attain the senior instructor qualifications outlined in *Chapter 1 – Senior Instructor Responsibilities,* including becoming a CMC trip leader

Senior instructors may recommend assistants for promotion to senior who demonstrate competence and proficiency in performing the duties and responsibilities outlined above. However, if your senior instructor believes you have the potential but are not quite ready, he/she will recommend that you return as an assistant for another session. This gives you the opportunity to work with another senior instructor to continue your training and further develop your skills and teaching abilities. Most assistants find it highly beneficial to work with more than one senior instructor.

CHAPTER 3 – EMERGENCY PROCEDURES

Be familiar with the CMC's Trip Leader Resources with recommended minimum first aid kit, backcountry essential equipment, guidelines for protecting against hypothermia and other mountain hazards, and safety information. In addition, this page has report forms, scholarship info, and other leader resources.

Also be familiar with WTS and BIM resources:

- WTS Field Emergency SOP on page 10 in this Instructor Supplement
- WTS Manual, Section III – Emergencies
- BIM – Learn More - First Aid Guide and Medical Report Form

CONSIDERATIONS

- **If injuries are manageable and casualty(ies) can walk out**, the group returns to the trailhead and takes injured person(s) to appropriate medical facility.
- **If injuries are manageable and NOT life threatening but casualty(ies) CANNOT walk out**, call 911 for on-site rescue, supplying your group's GPS coordinates, status (number & condition of hikers, injury descriptions, actions taken), and intentions.
    - Try to get recommendations from a medical provider about what to do until rescuers arrive.
    - Ask if rescue is coming by ground or air and tell them what signaling you will use.
    - Be vigilant for sounds or sightings of rescuers. Upon hearing or spotting rescuers, use whistles, signal mirrors, and/or other signal techniques.
- **If injuries ARE life threatening, require outside help, or casualty(ies) SHOULD NOT be moved**, call 911 with your GPS coordinates, status, and intentions for on-site rescue.
    - Work to the best of your abilities to stabilize and treat casualty(ies).
    - Get medical recommendations from the medical provider on what to do until rescuers reach the group.

COMMUNICATIONS

- **If there IS phone or text contact** and rescue is coming to you, ask if it will help to send two team members (runners) to trailhead to guide rescuers to the group. If walking out with a serious casualty, consider asking for sheriff escort to ER or hospital.
- **If you require outside help** and there is NO phone reception and the available satellite messengers and Personal Locator Beacons (PLBs) provide only one-way communication, the Get Help team goes for help. Runners should:
    - Lighten packs,

- Carry cell phones,
- Carry car keys,
- Gather GPS coordinates, status, and intentions of group,
- Gather any medical forms,
- Gather cell phone numbers of group.

- They periodically try to call en route and consider tagging the route with tape.

WHICH MEDICAL FACILITY?

When an injury or illness occurs, you need to make a quick decision about where to go for treatment. If calling, ask whether the facility is **in-network** in the patient's insurance plan, not just whether it accepts their insurance. Note, some providers in the facility may not be in-network. **In case of life-threatening emergencies, a hospital-based ER may be most appropriate.**

Urgent Care Clinics and Primary Care Doctors

- For situations that are not life-threatening, an urgent care clinic or primary care physician may be adequate.
- They have limited hours, particularly on weekends.
- They typically have shorter waiting times than ERs.
- The cost of an in-network office or urgent care visit typically ranges from a co-pay of $30 to $200.

Free-Standing ERs

- Free-standing ER's look very similar to urgent care centers but charge much more.
- They offer emergency care and stabilization for many life-threatening illnesses and serious injuries.
- They are open 24-7.
- They do not offer inpatient care.
- The average free-standing ER visit is $1,500 to $3,000. The cost may not be apparent until you get ready to pay the bill.

Hospital ERs and Trama Centers

- For more serious emergencies and life-threatening conditions, a hospital-based ER is more appropriate.
- These provide advanced equipment, specialists, and overnight hospitalization.
- Trauma centers are hospitals that have earned special certification, Levels I to IV. They are listed on Colorado Dept of Public Health & Environment's Find a designated trauma facility and Map of trauma facilities.

CHAPTER 4 – TEACHING GUIDELINES

Objectives: Upon completion of this chapter, you will be able to:

- List techniques of effective adult instruction.
- Describe your teaching style.
- List key components of group dynamics.

ENHANCING THE CURRICULUM

The WTS Manual, Instructor Supplement, and group instruction guidelines are regularly updated to incorporate new circumstances, information, and techniques. We encourage your contributions through the following processes:

- Small revision – error, clarification, broken link, etc. – email the manual editor.
- An idea that motivates you to help create or modify the curriculum in text, video, or activities – log in and see WTS Curriculum Enhancement (wts enhancement).

ZOOM CLASSES

WTS has recently included Zoom virtual Tuesday group meetings. These classes are very convenient for many and require different techniques to ensure student engagement and bonding. See the presentation on Instructor Information Zoom Group Slides PowerPoint for ideas and materials for your use.

EFFECTIVE ADULT INSTRUCTION

Critical Concepts

- Adult students have a wealth of experience and knowledge that they bring to the classroom.
- Adult students wish to understand the purpose behind each subject being taught.
- Adult students tend to be self-directed and prefer to learn in their own way.
- Adult students typically have jobs, families, and other distractions to learning.

Nine Events of Instruction are widely accepted as essential for learning:

1. Gain the students' attention.
2. Describe the objective.
3. Stimulate recall of prerequisite learning.
4. Present the material.
5. Guide students through the material.
6. Elicit performance.
7. Provide feedback about performance correctness.
8. Assess how well students are achieving objectives.
9. Enhance retention and transfer to the real-world setting.

Setting the Tone

- Start on time.
- Introduce yourself with information relevant to the group.
- Encourage each student to share his or her name and some facts about themselves.
- Ensure that each student knows what to expect from WTS.
- Create time to talk about what each student's expectations.
- Establish rapport with each student.
- Introduce the topic and agenda for the meeting.
- Be prepared with your own material. This includes logistics, equipment, and the ability to demonstrate skills.
- Close on time with a summary of the topic and information about what is needed for the next meeting or field trip.

Being a Leader

When you look at successful groups and expeditions, the leaders are the members who are responsible for making the team a cohesive unit. Often the success or failure of a team is due to the ability (or lack thereof) of the leader.

Good leadership qualities can be broken into distinct categories – communication skills, technical skills, people skills, and organizational skills. Individual skill levels vary in each category. Look at the following list and perform a self-evaluation; you may find strengths that you had not considered and/or areas that you think would benefit from further practice.

<table>
<tr>
<td>Communication Skills
○ Listening
○ Reading body language
○ Writing
○ Speaking effectively</td>
<td rowspan="3">People Skills
○ Alertness
○ Self-effacement (not drawing attention to oneself)
○ Self-sacrifice
○ Humor (give and receive)
○ Emotional control
○ Patience
○ Compassion
○ Good memory (names, faces, events)
○ Ability to take charge
○ Willingness to give credit where it is due
○ Equanimity in accepting input (draw from all sources)
○ Maturity
○ Good judgment
○ Confidence</td>
</tr>
<tr>
<td>Technical Skills
○ Intelligence
○ Knowledge (training and experience)
○ Appropriate physical skills
○ Preparation and planning of required materials and equipment</td>
</tr>
<tr>
<td>Organizational Skills
○ Critical thinking ability
○ Willingness to make decisions
○ Team-building skills
○ Ability to plan/coordinate/delegate
○ Ability to improvise or adjust based on conditions or events</td>
</tr>
</table>

Effective Teaching Techniques

- Reflect on your teaching strengths and areas to improve.
- Add to your tool kit – identify and integrate three new effective teaching techniques each session.
- Become aware of available CMC resources.
- Establish open lines of communication with other WTS instructors, especially with their teaching teams.
- Understand the subject matter at a high level.
- Understand how to teach adults.
- Recognize that effective teaching includes making connections with students and creating an atmosphere for students to establish relationships with each other.
- Appreciate diversity in people (avoid sexism, racism, classism, etc.)
- Communicate with clarity and consistency.
- Be flexible in making instructional decisions.
- Model what you teach.
- Set appropriate goals, concentrating on a few dominant goals.
- Demonstrate clear instructional focus.
- Offer an overview of each lesson at the start and summarize at the end.
- Clarify your expectations of the students.
- Give time for practice and provide feedback.
- Revise and re-teach based on student achievement.
- Use praise rather than criticism.

Be Mindful of the Group

- Ask questions from the beginning. Learn the expectations of each individual. What is their area of expertise, endurance level, and previous outdoor experience? If there is a student with relevant expertise, look for ways to encourage him/her to contribute to the class.
- Introduce new vocabulary in familiar terminology and then use both technical and common terms several times.
- Learn about group dynamics. Encourage the established phases from getting acquainted to sorting out roles to performing the tasks at hand.
- Respect Maslow's Hierarchy of Needs. If a person's physical needs are unmet (i.e. they are hungry, stiff or sore, need a break), he/she will not be able to assimilate the information you are imparting. For the greatest learning experience, make sure that you fulfill the group's basic physical needs.

Teaching Style

What teaching styles are most comfortable for you? What teaching styles may be more comfortable for your students? Since different people learn in different ways, an effective teacher will present the material in more than one way to accommodate these different styles. Mix it up; have fun with this.

- Participatory – involves many people in decisions

- Authoritarian – holds the position of authority over the group
- Hands-on – teaches by doing
- Demonstration-oriented – shows the skill rather than talking about it
- Question/answer – checks for student knowledge, asks open-ended questions
- Lecture – talks about data and concepts
- Informal – relaxed style, laissez-faire in decision-making
- Formal – follows a set structure

Be aware of your style so that you can make use of its advantages. Your style must be yours and yours alone – not someone else's. Most importantly, your teaching style must be flexible enough to respond effectively to the different learning styles of your students.

Encourage Questions

- Ask questions instead of just relaying the information to encourage student involvement.
- Be aware that some students will answer questions more often than others.
- Find something correct in students' answers or comments – usually some part of the answer is correct!

Caring

What does caring mean to you in the context of teaching WTS? Good instructors not only care for their students; they see each class and trip as an opportunity to help people learn and grow.

Effective Communication

- Target your vocabulary to your audience.
- Tune in to non-verbal language, both yours and the students'.
- Check in with your students to make sure they understand you.
- Solicit feedback from your students and other instructors in the group.
- Decision-making – The decision-making process affects everyone in the group. Group members should feel that they can contribute appropriately while the instructor uses his/her experience and judgment effectively.

Group Dynamics

- Groups are made up of individuals, each with individual strengths, weaknesses, fears, abilities, etc.
- The purpose of each group in WTS is to accomplish a **common goal together**. In addition, individuals may have their own goals for the course.
- The instructor needs to make sure that all individuals have the main goal in common.
- The instructor must communicate that the safety of the individuals is foremost. Safety includes both physical and emotional well-being.

Group Formation Stages

Every group goes through identified stages. It is helpful for instructors to recognize these stages, as well as the potential emotions of the individual participants. This knowledge helps instructors plan actions to facilitate smooth group formation.

- **Forming –** Participants are seeking to feel welcome and whether they are in the right group (or need to change groups)
- **Sorting –** Participants are discovering one another's identities (i.e. skills, experience, abilities) and the group guidelines (i.e. number of other participants, expectations, instructors' styles)
- **Norming –** Participants are following the guidelines (i.e. submitting homework, arriving on time, engaging in discussions)
- **Differentiating –** This is an important stage. Participants feel safe enough (emotionally and physically) to express their own needs, while maintaining the integrity of the group. Previous experience and preparedness for each meeting and trip are key factors in each individual's ability to differentiate.
- **Closure –** For the meeting to feel complete, some sort of conclusion is important near or at the end. This may be a brief thank you for participating, a quick sharing of highlights by each group member, or verbal or written evaluations. This is also a time to preview future meetings.

Bonding and team building are important objectives in WTS. Schedule some down time during each meeting and trip to give your students the opportunity to get to know each other, to chat about common interests, movies, kids, work, etc. Allow your students to lead this informal discussion; instructors may participate, but only with the implied permission of the students. It is more important for your students to get a little bit of "me-time" than it is to cover every technical nuance and extra credit item.

Communication Skills

Effective communication skills encourage positive group dynamics.

- Introductions – The instructors begin to establish connections among all participants by sharing relevant information. Introductions set a theme of inclusiveness for all the group members. They help each person establish eye contact with one another, learn names, and begin physical recognition. Name recognition is important later in case of an emergency and lends enjoyment to the group. Remember, some people take WTS to meet others.
- Supportive and respectful atmosphere – The instructors demonstrate their belief that all participants contribute to the group. They set the tone for respectful language, not interrupting, including everyone, etc.
- Challenge and stress – These are factors that greatly impact group dynamics. Stress often leads to poor performance, reluctance, and re-action instead of pro-action. Adults must be able to choose their own challenges.

Conflict Resolution

If conflict arises, the leader must act:

- Face the conflict. Avoiding it will not make it go away and often escalates it.
- Identify the underlying causes of the conflict. The key causes are not always on the surface.
- Try to understand all sides of the conflict. Remain calm and rational.
- Move the conflict away from the rest of the group.
- Identify possible actions to resolve the conflict to the agreement of the parties involved.

Steps for Confronting Conflict

- Explain the situation the way you see it.
- Describe how it affects performance.
- Ask for explanation of all viewpoints.
- Agree on the problem.
- Explore and discuss possible solutions.
- Agree upon each person's actions to solve the problem.
- Set a time for follow-up. Write down what happened.

Field Days (See also Section II – Field Days)

- Pre-trip information – Discuss clothing and equipment requirements, meeting place and time, etc. Describe the field day objectives and the trip route; this information makes students aware of the physical challenges and expectations planned for the day.
- During the trip – The instructors should try to reduce potential stressful situations by providing information and a reasonable level of personal choice throughout the trip.
- Goal accomplishment – Everyone must know the group goal. Students may also have individual goals. It is important to emphasize to individuals that the group goal is learning, NOT reaching a particular destination at a particular time or pace. Discourage peak-bagging and competitive attitudes.
- Trip pace – This is the most obvious component affecting group dynamics. A reasonably slow, steady pace at the beginning of the trip allows individuals to warm up their muscles, converse, and continue with name recognition.
    - Front and rear leaders should communicate with each other and frequently check in with participants.
    - The slowest person may have feelings of guilt, fears of holding up the group, and increasing anxiety. These feelings can transform into actions of not taking care of their personal needs, which can become a safety issue.
    - Never allow the slowest person to be the rear leader.
    - If the trip pace is too slow for the majority of the group, a variety of reactions may occur that also affect the group dynamics and safety.
    - If people have stopped talking, the pace may be too fast.
- Keeping the group together is critical. There is safety in numbers.

EFFECTIVE DECISION-MAKING

Leading a group of people in the backcountry requires constant decision-making. Effective decision-making is a result of experience, reflection, and common sense. It is the ability to evaluate the **probability** and **severity** of potential events and to act in the best interests of the group.

- Be prepared for changes in weather, injuries, or other unwelcome events. The distance from standard emergency response and resources intensifies the need for good decision-making skills.
- Anticipate decisions before you need to make them.
- Promptly identify when a decision must be made.
- STOP – **S**top **T**hink **O**bserve **P**lan
- Have no regrets that you have done your best.
- Communicate your decision to your students. Make it clear that you have the final say on decisions affecting the safety of the group.

SECTION II – FIELD DAYS

INTRODUCTION

Students repeatedly tell us that the field days are the most effective, rewarding, and fun aspect of WTS. Since this is our moment to shine, please make every effort to ensure all objectives in each lesson plan are accomplished. To avoid diluting the lesson, visitors are not allowed without prior approval of the director.

WTS encourages senior instructors to customize their lesson plans by adding additional elements, especially if working with advanced students, as long as the essential objectives of each lesson plan are covered. Begin each field day by giving your group a brief, general overview of your plans, goals, and objectives for the day. Estimate the probable finish time. Check clothing and equipment.

Place your primary emphasis on learning-by-doing. Ensure that all students participate individually in each exercise as directed by you. Encourage questions and suggestions from your students, and maintain a positive, patient atmosphere within your group. Remember, your students will have widely varying experiences and education as well as differing abilities and rates of learning. Do not assume that your students already know the skills, especially those that are safety related. Also, bear in mind that you are now a role model. Make sure that your actions reflect your words.

Review and become current with the WTS Manual. Many of your students' questions will pertain to topics and information contained there. The WTS Manual is the substance of the course; the Instructor Supplement contains instructor-specific information and provides tips, hints, and best practices. We also suggest you read the Learn More material on the WTS website and encourage your students to do the same. These articles discuss additional topics and/or provide further clarification of some of the subjects contained in the WTS Manual.

Lastly, **you** are the instructor. Although you may delegate, defer, or allow for some degree of student autonomy, it is **your** responsibility to ensure that your group completes all the objectives, and it is **your** responsibility to keep your students safe.

And perhaps the most important responsibility of all: **HAVE FUN!!** Achieving the objectives in the lesson plan is the number one priority; "conquering" the summit is a distant secondary goal.

RESCHEDULING

If circumstances prevent your group from achieving the objectives (i.e. weather, an emergency, lack of conditioning, etc.), then you should check with the WTS Director about the availability of permits for a possible make-up. Make every effort to select a make-up date that allows for full participation but understand that students' busy schedules may prevent them from attending. To be fair to all, both instructors **and** students need to be flexible.

Field Days

Although there are no guarantees, WTS will make every effort to provide stand-alone make-up days as instructor personnel become available. Within guidelines, students can also make up one field day in a subsequent WTS session. To ensure that students attending make-up days receive complete instruction on all topics, refrain from switching subjects and topics between the original field days. Consult the WTS Director if you have any rescheduling issues, or to clarify current guidelines for make-up field days.

Location

Many of the areas we visit have permit and/or fee requirements, restrictions on the number of participants, and/or seasonal closures. All field trips on public lands now require a permit. The applications for these permits are usually submitted many months before the session begins. The instructor team must coordinate with the WTS Director in choosing the location for each field day. The WTS Director (or designate) will need to know the location, start time, number of heartbeats, and the anticipated route prior to the field day and again following the completion of the trip. The Forest Service, for example, requires WTS to obtain prior approval for school field days on their lands, and to submit an end-of-the-year report documenting what we did. The Forest Service approval and reporting process applies to WTS field days because we are a school charging tuition and, therefore, our field days are subject to the same Forest Service rules as outfitter' trips.

Failure to comply with all federal, state, and private land requirements, whether known or unknown, can adversely affect the ability of WTS and the CMC to access this property in the future.

Post-Trip

Plan to stop for food/beverage on the way back from each trip. Most students benefit from getting to know one another in a more relaxed atmosphere. Individuals that bond with others in their group work together more effectively as a team and feel more comfortable asking questions and expressing their opinions. Set up after-hike plans in the morning before starting the hike so carpools can be arranged for those who prefer to go directly home. Restaurants close to the meeting point offer the greatest flexibility.

Some instructors record a GPS track of the group's route during each field day and then send a map via email to their students. Others take a group photo at some point during the day and send it to each member. Still others recognize student accomplishments by giving token awards to individuals selected by the students (i.e. Best Hiker, Best Knot-Tier, etc.) Again, make it fun!

MAKE-UP DAYS

In most sessions, make-up days are provided for all field days. A tentative schedule can be found under "Other Important Dates and Times" in *Current Session Information*. Since our students do not have direct access to that list of dates, we depend on our instructor groups to let their students know about them. Current students should arrange their make-up days through the instructor acting as make-up field day coordinator; students from the previous two sessions should arrange their make-ups through the WTS director, preferably by email.

The director will provide maps for the trips if needed.

Field Days

The senior instructor for a make-up field day will provide the students with the information needed for the day, such as meeting time and place. Like any other CMC trip, the minimum size for the group is four. Make-up instructors are typically exceptionally generous with their time, but we will consider canceling the day if the instructors feel that the number of students is too small to justify the effort. On occasion an instructor group will organize an extra make-up day for one or two of their students who could not attend the scheduled make-up. While we do not encourage that, we do not forbid it unless there is an issue with permits for the added make-up day. Permits are required for field days on U.S. Forest Service lands and for Boulder Mountain Open Space and Mountain Parks. Reservations are required for campsites at White Ranch Park. If you are planning such an additional make-up day, please check with the director and the make-up coordinator.

The Graduation Hike

The Graduation Hike make-up requires extra effort on the part of the make-up instructor team. The location and difficulty of this trip must address the likelihood of a wide range of hiking abilities among the students, since they could be from any group. The trip should be suitable for all student levels. The senior instructor for this make-up will need to choose a location for the hike, set up the hike on the club website, and organize planning meetings for the participants. Both the director and the make-up field day coordinator need to know the time and location of the planning meetings so they can inform the students and the instructor groups.

The timing of these planning meetings will depend on both the schedule for the session and the students' availability. The students will need enough time to plan the hike; on the other hand, some students may not know if they will need the make-up until the weekend of the scheduled Grad Hike. Therefore, the make-up instructor group must be willing to incorporate latecomers into the planning sessions. Try to schedule these meetings before the start of the group meetings if possible. If some make-up students are unable to arrive before the meeting, then the planning meeting may be held afterward. Please note, however, that some senior instructors may not wish to release their students from their scheduled group meeting. In some circumstances, the make-up

planning meetings may extend beyond the last lecture night. In that case, the director will make a room available at the CMC, though we ask the senior instructor to be sensitive to the cost of the room. Students should be encouraged to select a non-CMC site for their meetings.

Since the make-up students generally won't know each other and may have limited availability, the make-up instructor team might consider a different approach for the make-up Grad Hike versus the standard Grad Hike: Rather than spending extra time building group dynamics in a meeting room, have each student plan the complete trip on their own, including completing the Grad Hike form. Give students the option of working together (physically or via email) according to their individual time and preference. On the day of the trip at the meeting location, the senior instructor would rotate through the group, selecting a student to implement the next appropriate step of the plan (setting up carpooling, navigating to the trailhead, front and rear leaders, etc.), insuring that each student has one or more opportunities for leadership. This option allows a realistic and educational learning process in the field, as students must intensively interact with each other to accomplish the group goal.

Reporting Results

When the make-up day is complete, the senior instructor for the make-up should inform the relevant instructor groups, the make-up day coordinator, and the WTS Director of the results by email. If the make-up student is from a previous session, the results go to the director. There is no form for reporting these results. The make-up instructor simply needs to state whether the student earned credit for the day. Additional comments are often useful to the student's instructor team, but they are optional.

SECTION III – DRY LAND TRAVEL

WTS MANUAL SECTION I

Chapter 1 – Dry Land Travel Field Day
Chapter 2 – Gear
Chapter 3 – Nutrition and Hydration
Chapter 4 – Weather
Chapter 5 – Leave No Trace
Chapter 6 – Colorado Wildlife
Chapter 7 – Knots

CHAPTER 5 – DRY LAND TRAVEL GROUP MEETING

OBJECTIVES: During this group meeting, your students will:

- Begin team building through introductions.
- Check the accuracy of their contact information.
- Learn about the structure and goals of the course.
- Learn about gear and ways to acquire it.
- Learn what they will need to bring to the next group meeting where they will plot points for the Navigation Field Day.

The first team meeting is one of the most important. It is your chance to make a good first impression, start team building, and explain the structure of the course to your students.

PREPARING FOR THE MEETING

During Instructor Orientation Night, you will have time to meet with your instructor team. In addition to getting to know each other, you will want to assign assistants to take attendance and to grade homework. This is also an opportunity to plan the pack check for the first group meeting. Time is usually short during the group meetings; planning ahead will help you use the time efficiently.

The Group Meeting

1. Welcome
    a. Instructors briefly introduce themselves.
    b. Hand out any information sheets that you created and circulate a student list for checking: spelling, phone numbers, and email.
    c. Ask your students if they have any problems communicating by email.
    d. Ask your students if their drive to the CMC puts any constraint on meeting or quitting times.
    e. Tell your students which instructors will be available after class.
2. Course mechanics
    a. Do they have their ropes, manual, and compass?

   b. Describe the make-up procedure.
   c. Discuss physical conditioning and the need to exercise regularly.
   d. Emphasize knowledge, skills, and teamwork.
   e. Mention the Navigation Study Hall.
   f. Discuss the course schedule.
   g. Go through the forms in *Current Session Information*. Explain the importance of the online evaluations and the Personal Information Sheet. Highlight the need for students to complete their Personal Data online.
   h. Describe the field days:
      i. Meeting time and place
      ii. Grad Hike: no scouting; no GPSs, but altimeters allowed
      iii. Social gathering after the field days
3. Introductions
   a. Instructors briefly describe their background.
   b. Have your students introduce themselves, explain why they are taking the course, and tell what they hope to get out of the course. Ask if anyone has medical or emergency response training.
4. Pack check
   a. Special items: gaiters, gloves, hiking poles, sandals.
   b. Leave out one or two essentials during the pack check. Ask your students what is missing.
5. Tell your students what they will need to plot points next time: pencil, ruler, index cards, and the compass. Remind them to submit their Personal Information Sheet and to complete their Personal Data on the CMC website.
6. Take a group photo if you wish.

Follow up

- Email the group photo with names and email addresses to all students and instructors. In this email, remind the students of what they will need for the next group meeting.
- Inform the WTS director of any student needing to transfer to another group.
- Contact any student who did not attend the session and find out if he/she wants to continue with the course.
  - If yes:
    - Tell the student the procedure for making up the absence.
    - Briefly explain the content covered in the group meeting.
    - Tell the student how to access the manual on the WTS website.
  - If no:
    - Explain to the student the refund policy. There is no tuition refund once the school has started.
    - Inform the WTS director.

Chapter 6 – Dry Land Travel Field Day

Objectives: Upon completion of this field day, your students will be able to:

- Employ safe and effective techniques for hiking on varied terrain while traveling in the mountains.
- Shift their focus from reaching a destination to learning and maintaining an awareness of their surroundings.

Critical Concepts

- This first field day is a pivotal time for team-building – students will be comparing themselves to one another and judging themselves and their instructors.
- Instructors should make a special effort to give each student equal attention and recognition for the effort and contribution each one brings to the group.

Best Practices

The Dry Land Travel Field Day is the first time you will be out in the field with your student group. Their abilities are unknown, and they may have insufficient equipment and new boots. Therefore, please refrain from selecting an overly ambitious location and route for this exercise.

Observe your students carefully. Note their preparedness, fitness, pace, and overall experience and ability. Plan your remaining field days accordingly.

Field Day Topics

Instructors should demonstrate and explain the purpose behind each of the following subjects, and then allow students ample time to practice each new skill:

Trip Plan

Discuss the importance of a trip plan to start preparing students for creating one for their Graduation Hike.

Hike Structure and Trail Etiquette

Front and Rear Leaders

- Explain the roles and responsibilities of the front and rear leader positions. Appoint an assistant instructor to be the initial rear leader.
- Discuss the importance of maintaining a group count and keeping the group together.
- Allow students to assume and rotate these roles under instructor supervision as the day progresses.

Group Dynamics

- Be attentive to the developing group dynamics and explain the importance of maintaining this awareness.

- Ensure that all participants respect and accommodate the pace and experience level of each member.
- Acknowledge and utilize the unique skills and contributions each member brings to the group.
- Explain the importance of open communication and of listening to each person.

Breaks

- Take regular breaks for drinking/snacking, clothing adjustments, split breaks, and resting. Tell the group how long the break will last.
- Encourage students to speak up if they need a break.
- Verify the group count at the end of the break.

Right-of-Way

- Explain that, in theory, trail etiquette dictates that hikers have the right-of-way over bicyclists, livestock has the right-of-way over both cyclists and hikers, and people traveling **uphill** have the right-of-way over people traveling downhill.
- Inform them that the yielding party should move to the **uphill** side of people and the **downhill** side of animals.
- In practice, emphasize the importance of being considerate of others on the trail – particularly since WTS groups are large – and of using your best judgment.

Efficient Travel Techniques

Pace of Travel

- Explain that efficient backcountry travel requires establishing a steady pace that one can maintain indefinitely.
- Students should experiment to find a consistent pace that they can comfortably maintain for an extended period.

Rest Step

- Demonstrate the rest step: Place one foot uphill and transfer your weight to your downhill leg by locking the knee so that bones and ligaments replace muscle effort. Hold this position for a moment and switch legs.
- Explain that it is a useful way to conserve energy, especially while ascending a steep slope.

Rhythm-Breathing and Pressure-Breathing

- Explain that this technique is a way of synchronizing your breathing with your leg movements to conserve energy. Forcibly exhale to empty your lungs, pause, inhale, and take a step forward (inhaling generally comes easy!)
- Tell students that the number of breaths per step depends on the amount of physical exertion and the level of fatigue.
- Pressure-breathing, or the forceful exhalation of air, seems to regulate the amount of oxygen in the lungs and blood. It can also slow down your pace, which can help to decrease symptoms sometimes experienced at higher altitudes.

Taking measured steps and pressure-breathing in rhythm often help climbers reach summits with less difficulty.

Visit REI Expert Advice for additional tips on hiking and fitness at Expert Advice link at bottom of home page under Learning & Community. Select Hiking, then the desired article.

Off-Trail Terrain Travel Techniques

Scree

- Inform students that scree is rock or gravel that is less than four inches in diameter.
- Explain that it is arduous to ascend, but it can be a quick way down. However, use it as a last resort because it causes considerable damage to the environment.
- Demonstrate and emphasize the importance of stepping carefully to minimize rock fall and of staying outside the fall line of people above and below you by traveling in a diagonal line across the slope.
- Keep the group close together to avoid the momentum of a dislodged rock.

Talus

- Inform students that talus is loose rock greater than four inches in diameter that is usually big enough to step on.
- Demonstrate taking small steps, testing each rock for stability, and keeping your weight centered and in balance.
- Tell students to shout "Rock! Rock!" if they dislodge a rock while stepping or if they drop a heavy object. If they hear this warning, they should **not** look up but should protect their head.
- Again, avoid traveling in the fall line of another climber by traveling in a diagonal line or crossing one-at-a-time. Keep the group close together to avoid the momentum of a dislodged rock.

Boulder-Hopping and Scrambling

- Explain that scrambling involves using your hands to assist you in safely ascending/descending steep and/or exposed rock where the angle and/or exposure do not necessitate the use of a rope.
- Demonstrate and observe the proper use of hands and feet (pointing out handholds and footholds if necessary), maintaining balance and center of gravity over feet, taking small steps, and climbing with your eyes (looking three moves ahead.)
- Warn students that lichen-covered rock can be slippery when wet and muddy boots make all rocks slippery.
- Remember that WTS does not allow students to climb on rocks above his/her head. Be aware of each student's comfort level.
- Optional: Explain the rock rating system (i.e. Class 2, Class 3, etc.)

Slab Rock

- Demonstrate the technique of friction walking to travel over large, smooth slabs of rock.
- Teach students to maximize the contact between boot soles and the rock by walking upright and keeping feet parallel and pointing along the fall line.
- Tell them to keep their weight centered and to try not to lean in. Explain that they can face inward on steeper slabs if necessary.

Brush

- Advise students to try to avoid traveling through brush whenever possible!
- Discuss that it is typically in young forests and near the bottom of drainages.
- Demonstrate using your arms like a plow and being considerate of the person behind you when pushing aside branches by calling out "Branch!"
- Tell them to increase the separation between themselves and the person in front to avoid slap back.
- Mention that branches have a way of grabbing clothing and packs.

Tundra

- Discuss the fragility of alpine tundra.
- Explain the importance of spreading out to minimize impact and of stepping on rock, snow, dirt, or gravel whenever possible.

Stream Crossings

- Explain that if a stream crossing is necessary, look for the most calm, shallow area to wade across, which may be some distance away.
- Discuss the options of removing socks and/or crossing barefoot if you do not have alternate footwear, but beware of slippery logs, sharp objects, and rocks.
- Discuss the pros and cons of loosening pack straps and hip belt and using trekking poles for balance.
- Demonstrate crossing at a 45-degree angle facing upstream in groups of two or three with smaller people in the middle.
- Explain what to do if you fall: Try to lie on your back, face up, with your feet downstream. Before choosing a crossing site, be aware of hazards downstream.

GEAR

- Review the Ten Essentials and invite your students to conduct a pack "show-and-tell" by displaying the items they have gathered so far.
- Observe and discuss the appropriateness of your students' boots, clothing, and pack size.
- Emphasize the importance of layering in our ever-changing Colorado weather.

Nutrition and Hydration

- Observe whether your students have brought adequate amounts and appropriate types of food and water.
- During the lunch break, discuss the items you brought and why you chose them. Remain flexible and discuss options; tell them it is better to bring foods that they will eat, even if they are not the most optimal choices, than to bring "perfect" items that they find unappealing.
- Other important discussion points:
    - Hydrating the day before and the morning of your hike
    - Eating a good breakfast before your hike
    - Sipping every 15-20 minutes; not waiting for the sensation of thirst
    - Major nutrients; focusing on carbohydrates for energy
    - Eating small amounts frequently
    - Water purification methods – iodine and chlorine dioxide tablets, filters, and UV light – and the pros and cons of each

Weather

- Inform your students that checking the weather forecast is a crucial part of trip planning and preparation.
- Explain and watch for signs of an approaching storm – cloud formation, sudden changes in temperature and wind direction.
- Discuss safe/unsafe places to seek shelter in the event of lightning and the **30/30 lightning safety rule:** Seek shelter if the flash is less than 30 seconds (six miles) away and stay there until 30 minutes have passed since the last thunderclap.
- Emphasize the importance of spreading out and moving to a safer location. Demonstrate the last resort lightning position: Squat down or sit on your pack or foam pad with boots on and feet close together.
- Discuss UV light and the importance of using sunscreen.

Leave No Trace

- Review the seven principles of Leave No Trace and practice them throughout the day. Set a good example for the group.
- Hike single file in the center of the trail to avoid trail erosion and widening the trail; do not take shortcuts or cut switchbacks.
- Spread out on tundra, control noise levels, and pick up litter found along the trail.
- Take split breaks at least 200 feet away from water sources.
- Do not feed the wildlife.

Wildlife

- Discuss the types of wildlife you are most likely to encounter in Colorado – moose, black bears, mountain lions, rattlesnakes, elk, deer, mosquitoes, ticks, and microbes.

- Explain how to react if you encounter them – no direct eye contact, back away slowly, try to appear big, fighting back versus fetal position, treatment.
- Explain that wildlife encounters are generally much less hazardous than lightning, avalanches, hypothermia, and falling.
- Mention the Colorado Wildlife Habitat Stamp.

CORSAR (Colorado Search and Rescue) Card

- Tell your students that proceeds from the purchase of this card contribute to the Search and Rescue Fund, which helps reimburse volunteers for costs incurred.
- Mention that there is no charge for rescue by Search and Rescue groups.

Navigation Basics

- As a prelude to the Navigation Field Day, introduce your students to map and compass tools, provide them with a map of the area, and review the parts of the compass.
- Guide them through the process of orienting the map and identifying prominent features. Emphasize how the map relates to the surrounding terrain.
- Show them how to take a bearing. (Optional: Explain how to adjust for magnetic declination and plot the bearing on the map. Have them determine their location through triangulation.)

ONE-PAGE QUICK REFERENCE: DRY LAND TRAVEL DAY

Trip Plan – importance

Hike structure and trail etiquette – front/rear leaders, group dynamics, breaks, right-of-way

General travel techniques – pacing, rest step, rhythm-breathing

Off-trail travel techniques – scree, talus, boulders, slabs, brush, tundra, stream crossings

Gear – Ten Essentials, pack checks, boots, pack size, layering

Nutrition and hydration – emphasize carbs, eat small amounts often, eat a good breakfast, sip every 15-20 minutes, do not wait until thirsty

Weather – check forecast, signs of storm, 30/30 lightning rule, squat position

Leave No Trace – seven principles, center of trail, no shortcuts/cutting switchbacks, 200 ft. rule

Wildlife – never feed, animals most likely to encounter, how to react

Navigation basics – parts of compass, orienting map, shooting a bearing, finding location on map, magnetic declination

Knot-tying – demonstrate and practice the selected knot of the day

SECTION IV – NAVIGATION

WTS Manual Section II

Chapter 8 – Navigation Field Day

Chapter 9 – Mountain Navigation by Map & Compass

CHAPTER 7 – NAVIGATION GROUP MEETING

OBJECTIVES: During this group meeting, you will:

- Teach your students how to plot the points for the Navigation Field Day.
- Let your students know the meeting time and location, and what they will need for the field day.

PREPARING FOR THE MEETING

Your students will need the topographic map for your navigation site, a pencil, a ruler, an index card, and an appropriate compass to plot the points for the Navigation Field Day. It is helpful to have some extra yardsticks, pencils, and index cards available along with a pencil sharpener.

Tables showing the points of White Ranch in *Current Session Information.* WTS provides maps at ION for sites that instructor teams have previously selected.

Work with your instructor team to develop a plan for the field day:

- Optimal size for a navigating team is generally about half the size of a student group, so consider dividing your group for the field day:
  - Discuss how best to divide your group.
  - Choose who will cover which points.
  - Decide if the whole group will rejoin for lunch or at end of day.
  - Arrange to use two-way radios if you have them.
- Instructors should coordinate with instructors from other groups using the same area to avoid collisions at the points.
- Each group, while in the field, should plot and locate at least one "surprise" point:
  - Instructors are responsible for selecting the surprise point; it may make sense to choose a point that is on the route back to the trailhead.
  - Allow extra time for this point. The students will need to plot this point and agree on its location before the team heads out.

At the next group meeting, your students will need the topographic map for the Graduation Hike, which you received at ION. The WTS Map Library for Instructors has additional maps, JSON files, and useful instructional exercises.

THE GROUP MEETING

The primary goal of this group meeting is to ensure that your students have all the points in your group's area plotted. You will teach them the specific techniques needed to plot the points. Some teaching materials are in the file, Plotting Points.pdf on Learn More - Navigation.

- Review the features of the map: scale, contours, colors, notations in the margin, etc.
- Show your students how to draw accurate north-south lines on the map to use for measuring and plotting bearings.
- Review the terms for the parts of the compass.
- Describe how to use the compass as a protractor.
- Work through a couple of representative points in your assigned area step-by-step.
- As your students begin to plot points on their own, check the accuracy of their plotting. Your entire instructor team should be busy giving your students individual attention.
- Describe the terrain and vegetation in the area. Your students may want to wear gaiters and long pants to protect themselves from dense brush. They will need plenty of water.
- Make sure your students bring the point description sheet for the field day. If you plan to have them go to a surprise point outside of your assigned area, have them bring the point description sheet for that area, too.
- Remind everyone of the time and location to meet for the field day.

It is essential that instructors verify that the students have accurately plotted all points in their assigned area. Many students will not complete the list before it is time to leave. Ask them if they want to attend the Navigation Study Hall. Offer to meet with them early on the field day to check their remaining points.

At some point, you should discuss the navigation homework with your students. You can do this either at the group meeting or on the field day.

Follow Up

- Inform the Study Hall organizer how many of your students plan to attend.
- Arrange to be at the meeting location for the field day a little early to check the points that your students plotted.

CHAPTER 8 – NAVIGATION FIELD DAY

OBJECTIVES: Upon completion of this field day, your students will be able to:

- Locate their position on a map (orientation)
- Find the designated destination (navigation)
- Select a practical route from the present location to the designated destination (routefinding)

BEST PRACTICES

The day begins with instructors providing an overview:

- Discuss the navigation techniques your students will use: following a bearing, leapfrogging, back bearings, efficiently using trails and the terrain, constantly comparing the terrain with the map, and strategies for finding a point.
- Remind your students to step gently on the land: spread out on fragile soil.
- Tell your students to move quickly away from a found point to avoid giving its location away to another group.
- Describe the organization of each navigation team: route-finders, pacer, timer, and rear leader.
- If you have decided to divide the group, tell your students the team assignments.
- You may want the group to do a point or two together before splitting into teams.

Many instructors consider the Navigation Field Day to be the most physically demanding because the groups cover significant distances over steep topography. Some have difficulty with the long climb back to the parking lot. Make sure that your students are drinking enough water.

TEACHING TECHNIQUES

Provide supervised hands-on training so students become comfortable with the skills:

- Be patient and be alert to students who are either struggling or failing to participate fully. Do not let an exceptionally competent navigator do all the work.
- Keep everyone in your group busy doing something rather than just letting them follow the leader. This is easier within the smaller groups.
- Make sure that every student practices taking bearings and leading the group.
- Also let them learn to be good followers. Stress the importance of teamwork while respecting the leader(s) in charge.
- Assign and rotate the following hiking activities within the group (instructors will need to demonstrate each activity prior to assignment):
  - A leader and/or route-finder
  - A person to monitor distance while hiking (assume 1000 paces to the mile)
  - A person to monitor hiking time (assume the group travels at two mph)
  - Someone to monitor or observe elevation gains and losses

  - Someone to monitor topography while hiking (gullies, ridges, handrails, fail-safe)
- Understanding and appreciating the fundamentals is the primary goal. After finding a point, it is helpful to review with the group the techniques that produced success.

Although not all these activities will make sense during each leg of your journey, the exercise tries to reinforce the full suite of techniques backcountry hikers have at their disposal. If you find a student getting confused, return to the basics. If necessary, consider dedicating an assistant to help a struggling student if it won't compromise instruction for the rest of the group. By the end of the day, all students should understand the importance of these skills and the need to improve.

Some instructors prefer to immediately correct inefficient or incorrect routefinding decisions made by the students. Other instructors let their students learn through a never-ending process of trial and error. As you debate the merits of these methods, consider a more flexible balance between these two extremes. Learning through struggling has value if it does not consume too much time. Allow your students time to think and discover on their own but be prepared to intercede if this constructive struggling degenerates into tears and frustration.

FIELD DAY TOPICS

Estimating Distance

- Counting paces – Most people will get a number within five percent of 500, so a good rule of thumb is 1000 paces per mile on smooth, flat terrain. This number can vary significantly on hills, in brush, or on rough terrain.
- Monitoring travel time – Again, this will vary between students depending on their pace. Some of your faster students may hike at 3 mph, the slower closer to 1.5 mph. Since terrain also influences the group's pace, the standard for this rule of thumb should be about 2 mph.
- Monitoring elevation – If an altimeter is available, tracking the change in elevation on the quad map may be a more reliable measure of the distance traveled than either pacing or travel time – especially in rough, hilly terrain.

Using the Topographic Map

- Make sure that your students understand that the map is their primary tool for navigation. Some instructors pose the question, "Which would you prefer, map or compass, if you could have only one?"
- Discuss the significance of the various colors and symbols on the map: power lines, structures (original and photo revised), trails, roads, and streams.
- Measure distances on the map along curved as well as straight paths.
- Measure directions between points on the map using the compass as a protractor.
- Observe contours to recognize ridges, valleys, hilltops and peaks, saddles, cliffs, etc.

- Estimate the steepness of slopes from contour spacing.
- Discuss how to pick the quickest, safest, and/or easiest route.

Using the Compass

- Discuss true north and magnetic north.
- Measure a magnetic bearing with the compass and convert it to a true bearing.
- Convert a bearing measured from true north on the map to a magnetic bearing.
- Take intermediate bearings on objects or people to stay on course while traveling to the destination (leapfrogging).

Using the Map and Compass Together

- Use the compass to orient the map.
- Find your location by careful inspection of the topography and nearby features.
- Triangulation – Find your location by the intersection of compass back bearings from recognizable features.
- Plot the location of an unseen distant point and describe its position in the real world.
- Follow a route by reading the contours and following the topography.

ADVANCED TOPICS

Assumption and Repeat (Trial and Error)

This important skill is a more advanced form of triangulation where the distant topographical features are not certain, and you only have an approximate idea where you are on the map. Be alert to the possibility that the distant feature is off the map!

1. Make assumptions comparing the map and your observations in the distant real world.
2. Gather compass bearings from these distant points back to you.
3. Plot the bearings on the map and consider the validity of your physical location (determined by the two intersecting lines) in terms of logic, judgment, and common sense. Are your assumptions about your presumed location consistent with nearby topographical features?
4. If the plotted point is not in good agreement with your observations of the immediate area, then reassess your initial assumptions. Perhaps pick different distant topographical features and try again. This is an exercise where you can have confidence in your location only when the plotted point, logic, judgment, common sense, and the nearby observations all agree. Often, in unfamiliar terrain, this is the best that you get.

Interim Points (Leapfrogging)

This technique can lend a high degree of accuracy to cross country travel when the destination is not in view and a direct line of travel does not take you through difficult terrain. Once the students understand the concept, suggest ways to streamline it:

- The student(s) sent out to act as the next interim point can actively participate by sighting backward (taking a back bearing by aligning the south end of the magnetic needle with the orienting arrow.) The student(s) can adjust their location left or right to line up with the other students at the previous known point.
- Once the positioning of this interim point is accurate, one or more from this group can immediately head out to position themselves for the next interim point. This parallel activity is done while waiting for the students at the last known point to arrive. Each new bearing must be taken at exactly the interim point to avoid drift.

Boxing an Obstacle

This technique will allow the group to bypass a marsh, willow grove, lake, gulley, rock outcropping, or any other obstacle preventing their direct line of travel. The concept is easy. Plot a new bearing that takes the group 90 degrees (left or right), count paces until you think you are far enough to the side so that the obstacle will be bypassed, then head off again using your original compass bearing. Once you have passed the obstacle, plot a new bearing that will take the group 90 degrees (opposite) and travel back the appropriate number of paces. In theory, you should now be back on your original bearing. New variables (i.e. terrain, pacing) can compromise the precise line to reach the desired point. Caution: It is not unusual to have to box another obstacle while boxing the original obstacle.

Additional Tools and Tricks

- If you choose, your students may use altimeters, and you may tell students the elevation. Be sure to emphasize the errors inherent in these devices. Altimeter watches and GPS units often disagree. Bring a clear tube so your students can try out the poor man's altimeter.
- Do not allow students to use a GPS. The instructors may carry one. A recorded track of the day is a useful tool for debriefing, and praising, your students.
- Use the sun and the current time to approximate north. The sun is due south at about noon, standard time, and at 1 PM, daylight savings time.
- Beware – moss grows on any side of a tree that it chooses.
- *Chapter 8 – Navigation Field Day* covers handrails, fail-safes, and aiming off. Discuss these with your students to assure that they understand the concepts.

Knot-Tying

Demonstrate the knot(s) of the day. Ask your students to demonstrate any knots already taught.

Conservation and Leave No Trace

As always, CMC members should be exemplary in these practices.

ONE-PAGE QUICK REFERENCE: MAP & COMPASS DAY

Using the topographic map including significance of the colors and symbols

Reading contours to recognize features such as valleys, ridges, saddles, steep slopes, etc.

Measuring distance and directions:

Taking a bearing on one point

Locating your position on the map

Locating the bearing point on the map

Using the compass:

Shooting bearings and correcting for magnetic declination

Using intermediate bearings

Triangulating your current location

Routefinding based on terrain features

Tasks for all students to rotate through at least once:

- Routefinding
- Following a bearing
- Measuring distance
- Timekeeping
- Counting gullies
- Determining and calculating elevation
- Boxing, aiming off, fail-safes, and handrails

Knot-tying

Leave No Trace

SECTION V – SURVIVAL

WTS MANUAL SECTION III

Chapter 10 – Survival Field Day
Chapter 11 – Teamwork
Chapter 12 – Backcountry Incident Management
Chapter 13 – Survival
Chapter 14 – Wildfire
Chapter 15 – Medical Emergencies

CHAPTER 9 – SURVIVAL GROUP MEETING

Fourth meeting and field day in spring; third during fall sessions

OBJECTIVES: Upon completion of this group meeting, your students will:

- Know what to bring for shelter-building and fire-starting.
- Have started planning their Graduation Hike.
- Know the location, meeting place, and time of the Survival Field Day.

PREPARING FOR THE MEETING

In preparation for the Survival Field Day, you should have received a fire-starting kit from John Lindner at ION. Jeffco Open Space has removed the fire pits from their campsites, and open fires, other than with gas stoves, are no longer allowed. WTS fire-starting may be practiced outside of CMC HQ.

A first aid/rescue scenario is part of the field day, so you will need to plan it with your assistants. Conduct it out of sight from the public. You may want to conduct some tasks at the evening group meeting. Park rules no longer require that the school director inform the sheriff that an emergency exercise will occur.

THE GROUP MEETING

Preparation for the Survival Field Day

- Invite your students to bring their own fire starters (but NOT purchase new ones) on this field day.
- Describe shelter-building. Mention knots that are useful in shelter-building.
- Point out that *Chapter 15– Medical Emergencies* is useable as a pocket guide.
- Let your students know that an official trail map of their Survival Day site is on the website for Jefferson County Open Space.
- Inform students that they will be reviewing and practicing navigation concepts and to bring their questions.

Preparation for the Graduation Hike

Since your students will probably need a couple of weeks to plan their Graduation Hike, this group meeting is useful to get them started. Tell them about the goals for the hike and be sure all have the USGS topographic map(s) for the area.

CHAPTER 10 – SURVIVAL FIELD DAY

OBJECTIVES: Upon completion of this field day, your students will be able to:

- Employ procedures for spending an unexpected night in the backcountry.
- Employ effective responses to mountain emergencies.

REVIEW AND PRACTICE NAVIGATION

The restrictions on fire-starting and shelter building give WTS the opportunity to increase M&C work, something often requested in course surveys. This could include students planning their route for Survival Day in the parking lot, taking bearings on nearby landmarks, and planning routes to local features.

Instructors can discuss smart phones and apps (preferably the free version), with the precautions that batteries die, and devices break. Start with using the ubiquitous Google Maps to determine your coordinates, continue with how to install and use map apps such as AllTrails, CalTopo, COTREX, Gaia, US Topo Maps, and using fitness trackers to track your route. Some students may be ready to invest in a GPS device.

CRITICAL CONCEPTS

- Be mentally prepared – avoid believing "It can't happen to me."
- You won't survive if you don't expect to.
- Understand that "survival" does not mean comfort.
- Fully appreciate First Time Every Time.
- Be creative, but do not experiment with unpracticed or unproven techniques.
- Incorporate updates on human factors in accidents. See WTS Manual Ch. 11 – Teamwork

One important concept is First Time Every Time (FTET). It is critical that students understand that when they are cold, wet, scared, injured, tired, etc., their method to establish a shelter and/or fire must do more than **usually** work. Someone's life may depend on it. In addition, implementing techniques and carrying equipment that work every time will often allow them to simplify their survival kit by removing items that work only under certain conditions and within narrow parameters.

The caveat – there are no guarantees that FTET methods will **always** work. Sometimes the conditions are just too hostile. What it does mean is that if the FTET item does not work, the chances of other methods working instead are very slim.

FIELD DAY TOPICS

Before You Head out

- Leave your travel plans with a contact (See Emergency Information, p. viii).
- Do not go to a different location than the planned one.

- Leave a written trip plan in your vehicle along with an aluminum foil footprint of your boot's outsole to further assist rescuers who are skilled in human tracking.
- Discuss the SOP in the event someone gets separated from the group.

Getting Lost or Separated from Group – Delayed Return

There are many reasons for an unplanned overnight stay: losing the trail, injury to someone in your group or coming across an injured party, underestimating the difficulty of the terrain, bad orientation, navigating, or route-finding decisions, misjudging or mismanaging your time, unexpected weather or trail conditions, bad luck. Group dynamics can include hiking with slow companions or falling into groupthink, where everyone collectively makes unwise decisions or blindly follows the designated leader.

- Prevention:
  - Stay aware of your route – don't blindly follow the leader.
    - It's easy to lose the trail, especially on the way back.
  - Know cardinal directions at all times.
  - Look back occasionally – develop a mental image of the area.
- What to do if you are (or think you are) lost:
  - STOP – **S**top **T**hink **O**bserve **P**lan.
  - Signal the rest of the group.
  - Attempt to determine your location.
    - Use map and compass, landmarks, baseline; assess from higher ground if safe to do so.
  - Often it is best to just stay put.
- If you inadvertently get out of sight and sound of your group:
  - **Shout** – Call out to someone in your group.
  - **One whistle blast** – Listen for a two-blast response. Whistles give little directional information, so call out as soon as you are in voice range.
    - If you are injured, give three blasts, the standard emergency signal in the USA.
  - **Develop an action plan** – **S**top **T**hink **O**bserve **P**lan, hydrate, eat, adjust clothing.
    - If you are **certain** where you are and how to get to your destination or the trailhead, proceed, continuing to try to contact the group.
    - If you have the slightest doubt about your location or route, **stay put**. It is much easier to find a stationary person than one who is moving.

- If you must move to a safer or more visible location, clearly mark the last position known to the group and your route.

The group will look for you based on your last known location. If the group cannot find you within a reasonable amount of time, they will call 911. Search and Rescue will not look for an adult after dark, so prepare to spend the night.

Food and Water

- Don't count on finding food. Foraging is possible but plant and mushroom identification requires training to distinguish poisonous from edible plants.
- Fishing and hunting for food in an emergency are very difficult and likely wastes time that could be better spent on other activities such as shelter building.
- Staying hydrated is essential for maintaining your energy level and mental clarity. Even if you have no means of purifying untreated water, drink it anyway.

Emergency Shelter Concepts

An injury on the trail or an unexpected overnight stay may require that you rapidly construct a shelter. Select gear that you will store in your pack and carry on EVERY mountain or backcountry trip. See Chapter 10 – Survival Field Day in the WTS Student Manual for notes on bivies. Jefferson County Open Space no longer allows temporary shelters to be built on their land. City, state, and federal parks generally allow them.

Materials

Weather, time of day, and resourcefulness influence what students should build.

- Natural formations (deadfall, standing trees, caves, rock overhangs, etc.)
- Natural materials (snow trenches, snow caves, pine boughs, etc.)
- Items in the pack (space blanket, tarp, garbage bag, bivy sack, extra clothes, the pack itself)

Location and Orientation

- Different settings (forest, above timberline, on snow, etc.)
- Different elevations on a hillside:
  - Cold air tends to settle in valleys and gullies. Establishing a shelter just 100 feet up a valley side may result in a warmer stay.
  - Ridge tops are more visible but are also exposed to wind.
- Consider wind, weather, sun direction, and the location of the campfire. What would be important during a lightning storm or heavy rainfall?

Environmental Impact

- Demonstrate using minimal impact techniques.
- In case it is not obvious to the student, mention that in a survival situation, saving a life is more important than sparing the environment.

Practice

Divide the group into teams and give the teams 15-30 minutes for this activity:

- Each team should determine where and how to build their shelter and then actually do it.
- Have the whole class evaluate each shelter together:
  - Do the location and orientation make sense?
  - How many could fit inside?
  - Would it keep the weather out (allow rain to drain, resist the wind, etc.)?
  - Would they trust their life to their shelter? How would they modify their methodology to improve the survivability factor?

Staying Warm

- Carry adequate clothing; wear all layers and stow away coat sleeves.
- Use chemical hand warmers and hot water bottles; share body heat.
- Eat – carry enough food for an unexpected overnight stay.

Signaling

Steps

1. Get attention.
2. Communicate that you need help.
3. Mark or flag your route if you move.

Materials

- Audio contacts:
  - Shout, whistle (handy or clipped to the back of their pack?), cell phone
- Reflective surfaces – sunlight reflected off a mirror can often be seen for miles. You must move these in a pattern NOT replicated in nature, e.g., three flashes.
  - WTS compass mirror, candy wrapper, space blanket.
- Visual contrasts:
  - Colored side of space blanket, flagging tape, bright colored clothing, stomping down snow.
  - Campfires and campfire smoke – green boughs or damp leaves create smoke.
  - Geometric shapes or SOS.
  - Make sure that the signaling method can be seen from a distance.
  - Remove materials when they are no longer needed.

Fire-Starting

Jefferson County Open Space no longer allows fires to be built on their land. City, state, and federal parks MAY allow them during low fire danger times. You may need to schedule fire-starting practice for a suitable location rather than on Survival Field Day. If you use a food grill, keep your chemical starters in a pan or on a sheet of aluminum foil to prevent contamination of food.

Materials

- Ignition source (matches, lighters, metal match, flashlight battery on steel wool, etc.)
- Tinder (steel wool, calcium carbide, fire ribbon, etc.)
- Fuel (wood provided by the park)
- WTS fire kits. Have someone read how to use each item from the sheet in the kit.
- Heat reflectors (large log, rock, etc.)

Practice

Give the students 10 minutes to get their individual fires started:

- Point out that fire rings are NOT under overhanging branches.
- Encourage them to try different fire-starting materials.
- Have them try different fire lays (i.e. ways to assemble the firewood.)
- Have plenty of tinder and fuel ready to sustain the fire.
- Call attention to which methods seemed to work and which did not. Emphasize that practicing and testing their gear **before** an emergency is wise!
- Describe ways to use reflected heat, from a rock surface or a metalized tarp, to help stay warm.
- Note – TSA has detailed and complex requirements on flammable materials, batteries, and even gel insoles. Check carefully before you take your pack on a flight at TSA What Can I Bring?
- Before starting the fire make sure that you have adequate water on hand to extinguish it. Many campsites provide buckets for that purpose. Please use them.
- Keep the fire small. A large piece of wood that has been burning for an extended period will be difficult to cool. The material that you ignite should be mostly ashes when you finish.
- When finished, douse the fire with plenty of water, then stir the ashes and douse it again. The remains of the fire should be cool to the touch after dousing.
- Watch the remains of the fire for at least 30 minutes before leaving the campsite. Utilize this time to do one of the other exercises for the day, such as shelter-building or the mock emergency.

Knives (Optional)

- Types of knives:
  - Folded vs. fixed blade.
  - Blade and handle are equally important.
- Keep the blade sharp.
- Cut down and away from your body.
- Cutting branches:
  - For small branches, bend the branch and cut downwards.
  - For large branches, block the knife – place the knife blade against the branch and hammer it with an object such as a large rock or block of wood, driving the blade into the branch. Move the blade and repeat the process as necessary until the branch breaks free.

BACKCOUNTRY INCIDENT MANAGEMENT PROCESS

This typically requires one to two hours. A key objective is to develop a few good habits through practice. The instructor team may attempt to surprise their students with an exercise involving an injury, and to make them believe, if only for a short time, that the emergency is real. Some students dislike being tricked, so such an attempt should be handled sensitively. Letting the students know in advance that it is an exercise works just as well, and it avoids the risk of upsetting the students. Mention CMC's BIM and WFA courses for more comprehensive training.

For this exercise, it is important that the students observe and practice the four parts of an emergency and become familiar with the issues and activities that are common to most backcountry emergencies. The typical group will need a bit of coaching to understand what to do. Most will have never been part of this kind of event. Instructors should take this exercise seriously, as students will follow their lead.

Follow the User Guide-Incident Management Cards and use the Primary Cards BIMS Incident Management Cards that list an overview and roles on individual cards. These are also in a file on the WTS website under Learn More - Emergency Situations.

Emergency Scenario

While returning to the trailhead, late in the day, one of the assistant instructors takes a fall while hiking down the trail. Possible injuries to the patient are a broken leg, a head wound, and shock. Students must work together to establish groups that are best able to provide first aid, best able to go for help, and best able to establish an overnight bivy.

First, Secure the Accident Site

- Panic does not help. Help students slow down, calm down, and think.

- Help students identify someone who will oversee the overall emergency response (the Incident Manager). The Incident Manager (IM) will coordinate the actions of the others and be a focal point for effective communication.
- Ensure that students consider the safety of the site for the rescuers, bystanders, and patient.
- If the site is NOT safe, conduct the Initial Patient Assessment in place to determine if additional harm might occur if you move the patient. You may need to treat the patient in a risky location.

Second, Provide First Aid

Since WTS does not teach first aid, the emphasis in this exercise is to provide adequate assessment of the patient so that the group can obtain appropriate help.

Once the group identifies the first aid leader, that person should begin the assessment as soon as possible. If available, the first aid leader should have an assistant.

Patient Assessment – Use the First Aid Sequence initially. Continue monitoring with Medical Report Record and provide status to the Get Help Team and Incident Manager.

1. Check the patient's ABCs and LOC.
2. Conduct a body survey:
   - Ask the patient what hurts.
   - Ask for permission to conduct body survey.
   - Identify all critical injuries.
3. Provide TLC – communicate positively with the patient.
4. Collect vital signs:
   - Heart rate, breathing rate, pupils equal, dilated or constricted?
   - Maintain a log to document a vital signs trend.
5. Make patient more comfortable – protect him or her from the elements:
   - Insulating pad, pillow, tarp for wind and rain.
6. Ensure that the first aid team works as a team and focuses on first aid. (It is okay if they observe the activities of the other teams, but they should not leave the patient unattended.)
7. Ensure that the first aid leader keeps the IM informed.

Third, Get Help

For this exercise, using a cell phone to call for help is not an option. However, please verify that students have contact information available and perhaps even check to see who has connectivity. Be sure they know how to determine their GPS coordinates. In an actual emergency, they would always first try calling for help.

Prior to going for help, it is important that the rescue team:

- Knows the exact location of the patient on the map.
- Is aware of the time until nightfall and any significant obstacles.
- Knows what they will do when they get to trailhead:
  - Ask them what they will do, based on this specific scenario.
- Has money, car keys, contact information, etc.
- Understands the nature of patient's injuries (including documented vital signs).
- Knows how to guide the rescuers to the patient – mark the route or junctions?
  - Flagging tape, rock cairns, arranged vegetation, arrows scratched in ground.
- Leaves any gear critical to those remaining behind.
- Keeps the IM informed of their plans.

Fourth, Prepare to Bivy

The team should use their own equipment, the equipment of others (as appropriate), and the patient's own gear. To reinforce the importance of bringing all the equipment that we ask them to carry, they should get it out of their pack and put it into service. If the park rules forbid shelter building and/or fire starting, then the team should obey those rules. In this case, the team would simply demonstrate that they have the necessary equipment.

It is important that the bivy team establish:

Shelter – use the materials available:
- Will it protect from rain?
- Will it hold up under a moderate wind?

- Fire – light and sustain a fire.
- Food and other resources – inventory the group's supplies.
- Water – determine a source for the remaining group's water:
  - Use a metal cup to melt snow.
  - Find and purify nearby water.
- Signal – determine if they will use a mirror, smoke, flares, whistle, flagging, colorful clothing or tarp, and/or three of anything. This should be a discussion rather than practice, so that you do not alarm other hikers in the area.
- Communication – keep the IM informed of their plans.
- Consider the welfare of the group. Are the first aiders and patient shelter from rain, wind, sun? Is the larger group still warm and dry? Are they eating and drinking?

Move Patient to Shelter (Optional)

As the exercise wraps up, the instructors declare (due to pending rain, snow, lightning, severe cold, severe heat) that the patient must be moved to the shelter. The first aid

team, with the help of the bivy team, (remember, the go-for-help team is gone) needs to safely lift and transport the patient to the shelter.

The transfer team must:

- Prepare the patient prior to relocation:
  - Be sure patient is bandaged, splinted, and otherwise secured from further injury.
  - Is there a poncho, tarp, or mat that could be used as a litter?
  - Do students need to use their arms and locked hands?
- Work together to safely relocate patient:
  - Determine route so team does not stumble or drop patient.
  - Determine who oversees the move.
- Determine how they will get the patient into the shelter.
- Determine if there is room for the first aid team and others.

Helicopter Rescue (Optional)

Helicopters can be dangerous to bystanders and have specific operating requirements.

- Stand back unless SAR specifically requests your help.
- Tie down or remove objects that might fly up from landing area, stamp down loose snow.
- Do not blind the approaching pilot with a mirror once the pilot has seen you.
- Attach flagging tape nearby to indicate wind direction. Pilots prefer a gradual approach into the wind for landing.
- Put sunglasses or goggles on when the helicopter approaches. Wear a helmet if you brought one.
- Let the suspended litter touch ground to dissipate the painful electrical charge.
- Once the helicopter lands, approach only from the front and obey the pilot's hand signals. Beware of the spinning blades of the top and rear rotors.

Incident Management Wrap Up

Finish with a group chat to summarize and discuss lessons learned. It is okay if some of the students did not take any initiative. Usually this is because they are not sure what to do. Having never been through this sort of exercise, they have no point of reference. Most, however, will readily respond to direction or suggestions.

Use the lists and any observations you have made to discuss what they did well and what they could do differently next time. Consider the Instructor Assessment (see below) to be talking points, not a test or to point out fault. The best outcome would be for the group to appear to operate in a planned and coordinated fashion, yet with some promptness. There is no preferred order to the assessments.

Instructor Assessment

- Did the IM provide coordination and communication between the teams?
  - Did the IM identify and resolve any issues? Was there value added?
- Did the IM monitor the health and well-being of the other teams?
  - Due to relative physical inactivity, the first aid team tends to be the first to get cold, and since they are out in the elements, they may get wet.
  - The first aid team tends to ignore its own needs.
- Did the group use all resources (people and equipment)?
- Did each team focus on their assignment?
- Did each team keep the IM informed of their decisions and actions?
- In terms of FTET, what lessons did the students learn?
- In terms of their survival kit (this will vary for each student):
  - What needs to be higher quality?
  - What was too heavy relative to its usefulness?
  - Could a multi-function tool serve instead of several individual tools?

Wildfire

Wildfire is becoming more threatening to our ability to hike safely.

Check Colorado Wildfire Map, InciWeb, and other resources before you go not only for immediate danger, but also for distant smoke polluting your hiking area.

Consider fire-retardant clothing.

If you smell smoke:

- Determine where it is coming from and what direction it is going.
- Determine how imminent it is. Did it come in quickly or drift into the area?
- Plan your escape route. Fire travels uphill, so try to get below it or on the other side of the ridge. Large open areas, roads, streambeds, and an already blackened area may be safer. You may have to hike a long way to get out.
- Protect your lungs with N95 mask and by getting lower to the ground.
- Use your cell phone, satellite messenger, PLB, or other device to alert others to your location.

Knot-Tying

Demonstrate and practice the knot(s) of the day. Ask your students to demonstrate any knots previously taught. Encourage your students to use the knots taught in the course in assembling their shelters.

ONE-PAGE QUICK REFERENCE: SURVIVAL DAY

Survival kits – Establish the necessity of always carrying a small, adequate kit (and knowing how to use it).

Shelter-building – Have students construct and evaluate shelters.

Signaling – Have students use multiple devices and techniques.

Emergency exercise – Have students experience all four steps of handling an emergency.

Fire-starting – Ensure that the students finish this exercise with specific recommendations. Make sure to extinguish the fire before leaving.

Wildfire – Establish the importance of being wildfire aware by assessing fire dangers before leaving, reviewing alternative trails, being aware of fire movement, and carrying an N95 mask to protect your lungs.

Review and Practice Navigation – Lead students through field exercises.

Knot-tying – Have students practice assigned knots.

SECTION VI – SNOW TRAVEL

WTS MANUAL SECTION IV

Chapter 16 – Snow Travel Field Day

Chapter 17 – Avalanche

CHAPTER 11 – SNOW TRAVEL GROUP MEETING

Held during the third meeting and field day in spring; the fourth meeting and last field day during fall sessions.

OBJECTIVES: During this group meeting, you will:

- Tell your students the meeting time and place as well as the location of the field day.
- Collect helmets needed for your students and instructors.
- Tell your students how to dress for cold weather and how to protect themselves from intense ultraviolet light reflected from the snow.

PREPARATION FOR THE MEETING

Important – In the Fall session, the Snow Travel Field Day is the last field day, typically occurring after Thanksgiving week. In the Spring, it is the third field day, typically in May.

- Choose a location for the field day.
- Gather cold weather gear for demonstration during the group meeting.

Avalanche Considerations

Each field day location is specifically assigned by the WTS Director. WTS does not allow any Snow Travel Field Day to be held in an avalanche-prone area.

Safety must be a high priority always, so instructors should be familiar with conditions at their selected site. Regardless of the selected location, know the area you are going into. Check the following before the field day:

- Know the slope and the aspect of the slope you will be working on.
- Check for any terrain hazards.
- Plan a safe route to the practice site:
  - Do not use slopes below cornices.
  - Locate the practice site well beyond potential run-out zones.
  - Check for icy conditions and speed prior to students using the slope.
- Have an exit plan established before you head up the trail.

Equipment for Snow Travel Field Day

- The process to check out/in equipment will be discussed prior to the field day. WTS will provide a helmet for each student.

- Equipment exchanges may be necessary between the Saturday and Sunday instructors. The instructors are responsible for communicating with each other for the pre-agreed upon exchanges. After an equipment exchange, the instructor who used the equipment last will be responsible for returning and checking in the equipment to the CMC.

The Group Meeting

The instructor team should provide their students with the following information for the Snow Travel Field Day:

- Bring the Ten Essentials and ropes.
- The school will provide helmets. As a safety precaution, students must wear a helmet while on the snow slopes. Climbing, ski, or bicycle helmets may be used. Explain to your students that an excessively thick hat or a hat with a tassel can keep the helmet from fitting properly.
- Remind them of CMC's free Intro to Snowshoeing class. WTS does not use crampons, although you should explain their purpose and use.
- For safety and comfort reasons students should bring gaiters, trekking poles, traction devices, and an extra pair of gloves and socks and wear extra layers of warm clothing.
- Since there will be slipping and sliding on snow, their outer layer should be waterproof or substantially water resistant. Students should waterproof their boots.
- Remind them of the cold weather safety information in the Snow Day chapter
- Review human factors in risk management.
- Ensure that drivers are aware of CDOT winter regulations and wildlife on the road hazards.

Follow Up

Visit Colorado Avalanche Information Center (CAIC) to check on avalanche predictions for the field day.

Remind potential carpool drivers of CDOT's winter vehicle requirements.

Arrange for parking at St. Mary's Glacier (weekdays only), if that is your destination. Let your students know that there is a $20 parking fee. Each vehicle must have a CMC Member dashboard form and should park one behind the other to save space. Parking along the roadway at St. Mary's Glacier is illegal.

CHAPTER 12 – SNOW TRAVEL FIELD DAY

OBJECTIVE: Your students will be able to use safe and effective techniques for traveling on snow-covered terrain.

In the Colorado Mountains, snowfields remain on the slopes all year, especially on the highest peaks. Safe travel on snow is possible with practice and good judgment. Proper techniques will also conserve energy. In short, learning to travel proficiently on snow enables one to handle unexpected summer snow as well as opening the mountains to year-round hiking. You can now consider a slope you might have avoided in the past to be a better pathway to your destination and an opportunity for an exhilarating glissade on the way down.

CRITICAL CONCEPTS

- Through a variety of techniques, students should be able to identify and/or recognize unsafe snow slopes, and then select a safe route for their ascent or descent.
- Practice hiking and glissading techniques for ascent or descent of moderate snow slopes.
- Understand and practice self-arrest without an ice ax.
- Understand cold weather safety precautions
- Understand human factors in accident and how to avoid.

BEST PRACTICES

- Start early to avoid "slushy" conditions, wet snow, and thunderstorms.
- Check your students' equipment and clothing before venturing to the practice site. Today more than ever your students may need to change into their extra (dry) gloves.
- The CMC requires both students and instructors to wear helmets for these exercises. Help your students fit their helmets over their hats or balaclavas.
- Assure the students that you will avoid avalanche-prone terrain. However, avalanches are unpredictable and can happen at any time, even in safe zones.
- Station an instructor at the bottom slope during sliding exercises.
- Be careful of the gaps that sometimes form between the rocks and the snow at the sides and top of a glacier or snowfield. Also, watch for snow-covered ice at the base of a snowfield.
- Keep an eye out for students who may get cold, hypothermic or frostbit. Suggest that they watch out for each other.

FIELD DAY TOPICS

Cold weather safety

Re-read *Chapter 17 – Snow Travel Field Day.* Remind the group of the precautions, e.g., how snow travel conditions change during the day, the need to eat and stay hydrated to maintain warmth and energy, adjusting their layers as their activity level changes.

Human Factors in Accidents

Review *Chapter 11 – Teamwork*. Remind students of the increased risks in snow country,

Avalanche Avoidance

As the group hikes to the field day location, point out and discuss potential avalanche hazards. Before ascending to your destination, discuss and demonstrate how to assess the safety of the snow slope.

Routefinding and Avalanche Risk Recognition

- It's strongly recommended that you complete the Avalanche Aware course.
- Re-read *Chapter 16 – Avalanche* and related Learn More articles on the WTS website.
- Observe route from a safe distance. Plan your approach.
- Avoid gullies and basins. Select ridges instead.
- Compare CAIC Danger Rose to the topographic map.
- Frequently do the Plunge Test using ski pole (quick but less thorough).
- Dig snow pit, observe layers, do shear test (time-consuming but informative).
- Although not advised, explain that if one had to negotiate a steep snow slope (either up or down), hiking straight up/down the fall line is better than a traverse.
- On the way to the location, scan the terrain for recent avalanches.
- When heading up the trail, constantly evaluate the area.
- If any of the following conditions exist, get to a safe area:
    - Cracks form at the top of the slope or around your feet.
    - Ground feels hollow underfoot.
    - A "whumping" sound as you walk indicating a potential slab release.
    - You notice slope is snow-loaded from high winds.
    - Temperature and weather changes. Continually reevaluate conditions throughout the day.

Snow Travel Skills

Post-holing (and how to avoid it!)

- Begin the hike very early when the snow is hard. Plan to return before midday when the snow softens. Anticipate that upon your return the snow will be softer.
- Use snowshoes or skis.

Techniques for Ascending Snow Slopes

Note: Students and instructors must wear helmets.

- Mention that if the snow conditions were steep, hard, or icy, the climber would probably be wearing a seat harness.
- Hike single file and use the kick step. Each passing hiker improves the step a bit.
- Ascend straight up the fall line to decrease the possibility of avalanche.
- Ascend by traversing and using switchbacks.
- Mention that when the leader hiker is postholing, or leading other strenuous pitches, it is common courtesy to swap leads so everyone experiences the same exertion.
- Use a trekking pole as a third point of contact. Great to retain balance when you need to change direction.
- Rest step and rhythm-breathing: pick a pace and stride (smaller steps) that will allow you to maintain constant forward progress over time.
- An ascent up snow can be less challenging than the same slope with scree.

Techniques for Descending Snow Slopes

- Plunge step (be careful not to hyperextend your knee).
- Standing glissade, falling into sitting glissade.
- Using a trekking pole to control speed, to stop, and to self-arrest.
- Be conservative in your speed. Proactively slow down in anticipation that the snow may become hard, fast, and painful.

Self-Arrest Practice

Head down, face up is the most common fall position when carrying a pack. Your students will do this exercise with their packs off, and they will practice all positions.

Without Ice Ax

- On stomach, head uphill; on back, head uphill; on stomach, head downhill; on back, head downhill.
- Use elbows and toes as your four primary points of contact.
- Keeping your butt in the air puts more weight on the four points.

Knot-Tying

Demonstrate and practice the knot(s) of the day. Ask your students to demonstrate any knots previously taught.

Survival in Winter Conditions (optional)

- Snow caves, snow trenches, hollow area near tree trunks.
- Look around. In these conditions, can you make a shelter and start a fire?
- Tell your students about Winter Camping School typically in January each year.

ONE-PAGE QUICK REFERENCE: SNOW TRAVEL DAY

Cold weather safety guidance

Human factors in accidents

Avalanche risk recognition and avoidance

Routefinding considerations when traveling on snow

Postholing and how to avoid it

Techniques for ascending snow slopes

Rest step and rhythm-breathing

Self-arrest without an ice ax (all four positions)

Techniques for descending snow slopes

Knot-tying

Survival in winter conditions (optional topic if time permits)

If desired, demonstrate use of crampons and/or snowshoes.

Conservation – topics as determined by instructor

SECTION VII – GRADUATION HIKE

WTS MANUAL SECTION V

Chapter 18 – Graduation Hike
Chapter 19 – Next Steps

CHAPTER 13 – GRADUATION HIKE MEETING

OBJECTIVES: Students start planning at the third group meeting and will

- Plan their hike.
- Use the Grad Hike Form in CSI or your preferred planning template to divide tasks.

PREPARATION FOR THE MEETING

Important – In the fall session, the Grad Hike occurs before the Snow Travel Field Day. In both sessions, start preparation for the Grad Hike at the third group meeting, Avalanche in spring, and Emergency Situations in the fall.

During the second group meeting, tell your students the location and objectives of their Grad Hike. At the second or third meeting, distribute the topographic map for the area to start their planning. Encourage them to use additional maps (i.e. trail, terrain, satellite, and slope maps) in their planning. The school director will need to know the location of your Grad Hike before this, so you should start thinking about your choice for the location as soon as you have assessed the group's capabilities.

You may also want to explain the distinction between urgent and emergency care and costs on the Grad Hike form (See *Chapter 3 – Emergency Procedures*.)

Selecting the Destination

The senior instructor is responsible for choosing the Grad Hike destination. For safety reasons, at least one member of the instructor team must be familiar with the destination and possible route(s).

The destination must meet the following parameters:

- The hike cannot exceed the CMC moderate classification.
- The hike cannot be beyond the limits of the weaker students in the group.
- At least half of the planned route must be off trail.
- WTS must have a permit and/or approval to hike in the selected area.

Inform the WTS Director of your decision. The Director has final approval on all Grad Hike destinations.

Important – Tell your students that they may NOT scout the location or planned driving route prior to the trip. They should NOT use a GPS during either the planning or execution of the hike.

THE GROUP MEETING

Your students will do most of the work during this group meeting. You and your assistants should be available to observe, monitor their progress, answer questions, and ensure all students participate equally.

Student Responsibilities

- Obtain and review additional map(s) as needed for their routefinding. [Note: Each student must have his/her own copy of the map(s).]
- Determine possible routes to their destination by considering the difficulty, elevation gain/loss, and travel time.
    - Locating at least one alternative route is advisable.
    - Planning an escape route in case of an emergency and/or bad weather is strongly encouraged.
- Identify and discuss any natural hazards such as stream crossings, exposure to falling or lightning, and/or avalanche potential.
- Review trip reports, websites, and/or guidebooks for information regarding things such as trailhead accessibility and parking, closures or other restrictions, whether special permits are required, etc.
- Use the WTS Grad Hike Form in *Current Session Information* in the Student Manual or your designated form as a check list to develop the following information and provide it to the group:
    - Date, meeting time, and meeting location
    - Carpool arrangements and communication between drivers
    - Directions, mileage, and estimated driving time to the trailhead
    - Coffee or restroom stops along the way?
    - Hike logistics – distance, elevation gain/loss, estimated time, CMC hike classification, types of terrain expected
    - Turnaround time
    - Bailout plan or escape route
    - Emergency contact(s) who have the trip plan in case the group fails to return on time
    - County hike is in and sheriff's department number
    - Weather forecast for the day
    - Required gear and clothing (in addition to the Ten Essentials)
    - Any shared (group) equipment in case of an emergency
    - Any other information deemed necessary for a safe and successful trip
    - Plans for the post-hike celebration
- Submit the WTS Grad Hike Form to the senior instructor.

Follow Up

Your students will probably need to meet outside of class to complete their preparations. Instructors generally do not attend those meetings. On the other hand, it is helpful to have your students copy the instructor team when communicating by email.

CHAPTER 14 – GRADUATION HIKE

OBJECTIVE: To have your students put the mission of WTS into practice by:

- Planning and executing a Grad Hike.
- Understanding and implementing the teamwork required for safety.
- Demonstrating navigation and routefinding skills.

BEST PRACTICES

- Allow students to execute the trip from beginning to end.
- Remind and reinforce the topics taught to students throughout the course.
- End the course on a high note by having fun!

TOPICS AND RESPONSIBILITIES

Instructor Responsibilities

- Observe and ensure students carry out their hike as planned.
- Allow students to make mistakes, within reason, and learn from the experience. (However, you must also exercise prudence to avoid large blocks of wasted time.)
- Answer questions and provide advice with respect to potential safety issues and/or to keep the group reasonably on track.
- Determine escape routes in case of an emergency. (Your students should have determined them as part of the trip-planning process, but you should do this as a backup just in case.)
- **Oversee and ensure the safety of the group:**
  - Instructors must override any student decision(s) that could compromise the group's safety.
  - The senior instructor is accountable for the well-being of the group.

Student Responsibilities

- Lead the group safely from beginning to end according to their trip plan.
- Rotate front and rear leaders throughout the hike so all students serve in each role at least once.
- Assist and support with problem-solving throughout the day.
- Respect the decisions of each front leader in command.
- Resolve navigation and routefinding issues together as a group.
- Employ Leave No Trace principles.

Topics and Skills

Students should practice and utilize the following skills throughout the day (as appropriate to conditions and their destination):

Leadership and Teamwork

- Planning and coordination
- Front and rear leader duties
- Group responsibilities during the hike
- Good judgment

Navigation

- Routefinding
- Terrain-reading
- Determining distance and elevation
- Dead-reckoning with the compass

Fundamentals

- Gear
- Nutrition
- Weather awareness
- Leave No Trace principles
- Incident Management and emergency techniques
- First aid

Travel Techniques

- Pacing, rest step, rhythm-breathing
- If there is snow along the route – traversing, kick-stepping, plunge-stepping, glissading

Knot-Tying

Demonstrate and practice the selected knot of the day; review knots learned throughout the course.

ONE-PAGE QUICK REFERENCE: GRAD HIKE

Instructors

Observe students' execution of trip plan.

Ensure equal participation among students.

Assess individual and group performance of skills and roles listed below.

Discuss weather (i.e. What is happening now? What can they anticipate?)

Discuss potential emergencies (i.e. What would you do if…?)

Knot-tying.

Ensure safety of group at all times

Students

Safely execute trip as planned.

Rotate front and rear leader assignments.

Utilize navigation and routefinding skills and travel techniques appropriate to terrain encountered.

Respect leadership and work together as a team with respect to decision-making and problem-solving.

Exercise good judgment with respect to time, weather, LNT, and physical and emotional condition of each member.

All

Have fun!!