**HomeWork for Section I—Fundamentals**

- View Gear and Hygiene lecture video.
- Read *Current Session Information, Course Overview, Section I—Fundamentals*.
- Prepare for Dry Land Travel Day (Field Day 1).
- Assess your equipment needs; start assembling the Ten Essential Systems.
- Practice knots.
- Complete quizzes below or online and submit per your instructors.
- *Read Section II—Navigation* before lecture.

Senior Instructor: _______________  Student: _______________

**Gear:**

1. Select the Ten Essential Systems:
   1. Navigation
   2. Insulation (extra clothing)
   3. Irrigation
   4. Fire
   5. Edible plant guide
   6. Trekking poles
   7. Hydration (extra water)
   8. Emergency Shelter
   9. Communication
   10. Sun Protection
   11. Cell phone
   12. First Aid Supplies
   13. Knot-tying guide
   14. Illumination
   15. Repair Kit and Tools with knife
   16. Nutrition (extra food)

2. Select the three components of the layering concept for clothing:
   - ☐ Wicking inner layer  ☐ Reflective mid layer  ☐ Protecting outer layer
   - ☐ Absorbent inner layer  ☐ Insulating mid layer  ☐ Waterproof outer layer

3. Select six items that can help you adapt to changing weather on a hike.
   - ☐ zipper  ☐ cotton jeans  ☐ flip flops  ☐ hood  ☐ roll-up sleeves  ☐ buff
   - ☐ water bottle  ☐ cap  ☐ trekking poles  ☐ vest  ☐ waterproof boots

T  F  4. It is acceptable for group members to share the burden of carrying essential equipment.

**Nutrition and Hydration: continued on next page**

T  F  5. You can live weeks without food, but only two to three days without water.

T  F  6. At altitude, food intake can be more difficult due to impaired food absorption and poor appetite.

T  F  7. The sensation of thirst occurs before the onset of dehydration.

T  F  8. Carbohydrates are not readily burned as energy, and are used for tissue maintenance, growth, and repair.
Fill in the blanks if submitting the homework as two separate sheets:

**Senior Instructor:** ________________________  **Student:** ______________________

**T**  **F**  9. It is better to eat small amounts of food frequently than to consume large amounts less often.

**T**  **F**  10. WTS recommends carrying at least two liters of water on a day hike.

**T**  **F**  11. By adding a little protein and/or fat to your carbohydrate of choice, you reduce the rate at which carbohydrates are absorbed and make your energy source last longer.

**T**  **F**  12. Fluid losses increase at altitude due to more rapid breathing and drier air.

**Weather:**

**T**  **F**  13. To avoid being caught on a summit or ridge during a thunderstorm begin your hike early.

**T**  **F**  14. Seek shelter under a solitary tree in a lightning storm.

**T**  **F**  15. When caught in a thunderstorm, it’s usually safer to keep moving to a less risky location than to assume the lightning position.

**T**  **F**  16. When caught in a thunderstorm and traveling in a group, keep as close together as possible to reduce the probability of a lightning strike.

**T**  **F**  17. Thunderstorms in Colorado are most likely to occur from late April through late September.

**T**  **F**  18. It can snow in the high country any month of the year.

**T**  **F**  19. Generally, a high-pressure system means good hiking weather in summer.

**T**  **F**  20. Sudden temperature change, rising winds, and billowing vertical clouds are all indicators of an approaching thunderstorm.

**T**  **F**  21. A shallow, roofed cave would be a better shelter from lightning than a grove of trees that are shorter than the ones surrounding them.

22. If you count the seconds between seeing a flash of lightning and hearing the clap of thunder, one mile is equal to ____ seconds.

**Leave No Trace:**

23. Select the seven principles of **Leave No Trace**:

- [ ] Plan ahead and prepare
- [ ] Travel and camp on durable surfaces
- [ ] Minimize campfire impacts
- [ ] Leave firewood for next group
- [ ] Feed wildlife
- [ ] Camp near stream
- [ ] Dispose of waste properly
- [ ] Build cairns
- [ ] Leave what you find
- [ ] Bury your trash
- [ ] Respect wildlife
- [ ] Be considerate of others
- [ ] Do impulse trip

**T**  **F**  24. Choose a potty location at least 100 feet away from water sources.

**T**  **F**  25. Walk alongside rather than in the middle of muddy trails so you don’t get your boots dirty.
HOMEWORK FOR SECTION II – NAVIGATION

- Continue preparations for Dry Land Travel Day (Field Day 1).
- Begin preparations for Map and Compass Day (Field Day 2).
- Plot and check all points in your assigned area.
- Practice knots.
- Complete quizzes below or online and submit per your instructors.
- Check schedule and read next section.

Senior Instructor: _______________________  Student: ________________________

Map Reading: All questions refer to USGS topographic maps.

T  F  1. North is at the top and the right and left edges form true north-south lines from top to bottom.

T  F  2. The red section lines within USGS quad maps are reliable true north-south and east-west lines.

T  F  3. Contours are brown lines on the map joining all points that are at the same elevation above sea level. The closer together the contour lines, the steeper the slope.

T  F  4. On a map with a scale of 1:24,000, one inch on the map represents about one mile on the ground.

T  F  5. Green shows vegetation dense enough for someone to hide in.

T  F  6. Index contours are in bold face and have elevation labels at intervals.

T  F  7. Hourglass-shaped contour lines indicate saddles and passes.

T  F  8. Contour lines that form Us or Vs and point toward higher elevations indicate valleys and gullies.

T  F  9. Streams generally indicate valleys or gullies.

Navigation Video:

10. Search and Rescue missions are most often sent out for hikers who are:
- off-trail ~70%  on trail ~20%  on-trail ~70%  off-trail ~50%

11. Two coordinates to remember in Colorado are Baseline Road in Boulder (parallel line) and Union Station in Denver (meridian line) at approximately:
- Baseline 90°  Baseline 40°  Union Station -105°  Union Station 180°

T  F  12. Traveling off-trail generally requires twice as much effort as on-trail.

Mount Vernon topographical map:

13. How many feet would you have to climb to get from the point where the power line crosses the creek in Bear Gulch to the top of Bald Mountain?
- about 200’  about 2000’  about 880’  about 50’

14. How many feet would you have to descend to get from the spring at Charm Spring directly north to U.S. Highway 6?
- about 1040’  just under 900’  about 2000’  about 400’

15. Select the most serious problem you might encounter?
- poison ivy  steep slopes  water crossing  no trail
Fill in the blanks if submitting the homework as separate sheets:

Senior Instructor: _______________________  Student: _______________________

Mount Vernon topographical map (continued):

16. How steep is the steepest slope on the southwest side of Bald Mountain between the top and the light duty road shown by the double line?
   - about 90 degrees  - about 30 degrees  - about 45 degrees  - about 15 degrees

17. How steep is the steepest slope to the north and directly above the southeast end of Tunnel No. 2 on U.S. Highway 6?
   - about 50 degrees  - about 30 degrees  - about 90 degrees  - about 15 degrees

The following questions refer to a true bearing line drawn between the spring at Charm Spring and the junction of Beaver Brook Trail and the old trail shown by the dashed line that runs north-south on the east side of Bald Mountain.

18. What is the true bearing from the spring to the junction?
   - about 113 degrees  - ~ 45 degrees  - ~ 180 degrees  - ~ 90 degrees

19. What is the true bearing from the junction to the spring?
   - 30+90 = 120  - 113+180 = 293  - 45+45 = 90  - 113+90 = 203

20. What is the general direction of travel from the junction to the spring?
   - North  - South  - Northwest  - West

If you walked the bearing from the spring to the junction,

21. How many feet would you climb from the spring to the highest point?
   - About 100’  - About 1000’  - About 2000’  - About 500’

22. How many feet would you descend from the highest point?
   - About 460’  - About 1000’  - About 100’  - About 2000’

23. How far apart as the crow flies are the points in miles?
   - About 1.5 miles  - About 0.75 miles  - About 2 miles  - About 0.5 miles

24. If traveling from the top of Bald Mountain to the spring at Charm Spring, which route would be more efficient, i.e., conserve energy for possible future emergencies?
   - Follow trail and road north to Beaver Brook Trail, then west to the spring.
   - Follow a bearing to the spring.

Compass Use:

25. The angle between true north and magnetic north (the direction the compass needle points) is the magnetic declination.
   - T  - F

26. In the western U.S., magnetic north always lies west of true north.
   - T  - F

27. When measuring the bearing between two points in the field where the magnetic declination is east of true north (as in Colorado), you must add the declination to the magnetic bearing to get the true bearing (T=M+D).
   - T  - F

28. When using the compass as a protractor to measure bearings, you can ignore the direction of the compass needle.
   - T  - F

29. Iron, steel, electrical currents, cameras, and GPS units may strongly affect the orienting arrow.
   - T  - F
Homework for Section III - Emergencies

- Prepare for Survival Day and Grad Hike.
- Assemble survival gear, clothing, and fire starters for testing.
- Practice knots.
- Obtain topographic map for Grad Hike.
- Review WTS Grad Hike form (at the end of the Homework section) and begin preparations for Grad Hike.
- Complete quizzes below or online and submit per your instructors.
- Check schedule and read next section.

Senior Instructor: ___________________________ Student: ___________________________

Incident Management/Survival:

1. A positive attitude is the most important element to increasing your survival odds.
2. Hypothermia is the #1 killer of outdoor recreationists.
3. The average outdoor survival emergency lasts five days.
4. When securing the accident site, you must first make sure that the site is safe for the patient.
5. The distress signal for wilderness use in the United States is three blasts of a whistle, three shots, etc.
6. The most important thing to use in an outdoor survival situation is your first aid kit.
7. The trip leader should always take charge as incident manager in case of an emergency.
8. The get-help team doesn’t need to know the exact location of the patient.
9. The bivy team needs to at least shelter the patient and first-aiders from the elements.

10. What are the four steps of Incident Management?

   - [ ] Start a fire
   - [ ] Secure site
   - [ ] Assign roles to group
   - [ ] Bivy
   - [ ] Get-help
   - [ ] First Aid
   - [ ] Put out flagging tape
   - [ ] Call 911

11. What are the four roles needed in Incident Management?

   - [ ] Leader to assess supplies on hand
   - [ ] Incident Manager
   - [ ] First Aid Leader
   - [ ] Bivy Leader
   - [ ] Scout for water
   - [ ] Leader to find cell phone coverage
   - [ ] Leader for edible plants
   - [ ] Get-Help Leader
   - [ ] Navigation Leader

12. What is the most important aspect of your choice of fire starters?

   - [ ] Waterproof
   - [ ] First Time Every Time
   - [ ] Easy to carry
   - [ ] Familiar to you

Wildfire: continued on next page

13. Smoke inhalation can damage healthy lungs and even kill you due to decreased oxygen, harmful particles, and toxic gasses.
Fill in the blanks if submitting the homework as two separate sheets:

Senior Instructor: ________________________  Student: ________________________

T  F  14. To best alleviate smoke damage from a distant or nearby wildfire, you should carry an N95 mask that blocks fine smoke particles.

15. The safest strategy to get away from a fire is:
   a) Hike to the head of the valley
   b) Stay on a ridge line so you can see the fire
   c) Hike back the way you came as it is the fastest way back to your car
   d) Get to the other side of the ridge away from the fire.

Medical Emergencies:
T  F  16. Shortness of breath, weakness, and headache may indicate acute mountain sickness.
T  F  17. Shivering, loss of dexterity, and becoming quiet may indicate hypothermia.
T  F  18. Any basic first aid course provides adequate training for backcountry emergencies.
T  F  19. In a hot environment, cramps, fainting, and exhaustion may indicate heat exposure.
T  F  20. You should assume a neck or back injury in all unresponsive patients.

21. The initial evaluation of an accident patient includes an assessment of the ABC’s:
   □ A Airway           □ B Be calm           □ C Consciousness
   □ A Assess accident causes □ B Breathing       □ C Circulation

22. The most effective treatment for acute mountain sickness is to:
   □ Descend  □ Ascend  □ Remain where you are until you feel better.
   □ Eat and drink something

Survival Field Day Video: (Link from Course Materials page.)
T  F  23. In a survival situation it’s more important to stay hydrated than to stay nourished.
T  F  24. Your survival equipment (tarp, cords, flashlight, etc.) should be camouflage color to blend in with the environment.
T  F  25. It is critical to maintain body temperature of all group members in a survival situation.
T  F  26. The first thing you should do in a survival situation is to start a fire.
T  F  27. The first thing you should do in a survival situation is to establish priorities.
T  F  28. A closed-cell foam pad is not useful unless it’s full length (head to toes).

29. Your shelter needs to provide protection from what three things:
   □ Animals  □ Wet  □ Solar rays  □ Wind  □ Hunger  □ Cold
HOMEWORK FOR SECTION IV – SNOW TRAVEL

- Prepare for Snow Travel Day.
- Assemble appropriate cold weather gear. (WTS provides ice axes and helmets.)
- Practice knots.
- Continue preparations for Grad Hike.
- Complete quizzes below or online and submit per your instructors.
- Check schedule and read the next section.

Evaluations of WTS course and of your instructors are due after your graduation hike.

Senior Instructor: _______________________  Student: ______________________

Snow Travel:

T  F  1. The number of snow layers has no impact on avalanche potential.
T  F  2. Carrying a beacon will guarantee survival if an avalanche occurs.
T  F  3. Suffocation is not the only way to be killed in an avalanche.
T  F  4. You don’t have to be concerned that a 20° or 50° slope will slide.
T  F  5. A single beacon in a group of victims and rescuers is worthless.
T  F  6. If you have complete avalanche knowledge and do everything correctly, you don’t have to be concerned about being caught in an avalanche.
T  F  7. The human factor has no impact on the occurrence of an avalanche.
T  F  8. After 30 minutes under the snow, buried survivors of an avalanche have a less than 50% chance of still being alive.
T  F  9. A small avalanche cannot bury a person.
T  F  10. If there’s an expert in the group, you don’t have to pay attention to your own warning concerns.
T  F  11. One of the dangers in team decision-making is the desire to stay consistent with your original goals for the trip.
T  F  12. You won’t trigger an avalanche if you’re at the bottom of a hill.

13. What are the three basics that are important in determining avalanche potential?
   □ Terrain  □ Snowpack  □ Person to trigger it  □ Weather  □ Cornices
   □ Avalanche chute  □ CAIC rating of Considerable

14. What is the primary survival strategy with respect to avalanche hazards?
   □ Airbag pack  □ Don’t get caught in one  □ Swimming strokes  □ Avy beacon