

Chapman University Field Research Safety Manual

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This manual provides guidelines and resources to lead safe, successful field courses and research trips. The content focuses on risk management issues that are relevant for California-based field courses and research, international trips, research expeditions, and other outdoor excursions. Field sites may include field stations, natural reserves, public lands or parks, wilderness areas, coastline or waterways, or more controlled sites such as construction areas, excavations, or mines. This manual was developed to serve as a reference document and teaching tool as well as to highlight applicable University policies and State/Federal laws. The manual is organized into key sections on **planning, training, incident response, best practices for trip leaders**, and appendices on **common field hazards** and **local campus resources**.

Integration of field safety planning into routine instruction and training will meet key objectives and regulatory requirements of the Injury and Illness Prevention Plan (IIPP). The IIPP is a written safety program to protect employees from illnesses and injuries per the California Code of Regulations Title 8, Section 3203, by establishing a safety management framework for identifying and correcting workplace hazards, ensuring employee training and compliance, and communicating information related to safety and health issues. Faculty, staff and students, including student employees and volunteers, are accountable for health and safety rules and following safe work practices, including:

- obtaining appropriate training for designated activities
- using personal protective equipment (PPE) and safety equipment as required and directed,
- reporting unsafe conditions, malfunctioning equipment, and other safety concerns,
- reporting all injuries and incidents, and
- understanding what to do in the event of an emergency.

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Introduction

Risk, and recognizing the possibility of loss or injury, is integral to experiential learning and is inherent in field environments where we teach and conduct research. A field instructor or researcher must also be an effective risk manager who understands and anticipates risks and acts appropriately to reduce the likelihood of negative consequences. Accidents often result from a combination of challenging conditions, inadequate preparation, and poor communication. For this reason, an effective trip leader must incorporate many attributes of leadership including preparation, competency, effective communication, appropriate judgment, self and group awareness, and tolerance for adversity and uncertainty.

Chapter 1: Planning

- Assess Potential Field Hazards
- Assemble a written Field Safety Plan
- Register Your Trip for Travel Insurance
- Identify Appropriate Equipment, Gear and First Aid Supplies
- Complete Forms/Documentation
- Consider Transportation Options & Precautions
- Communicate with Participants Before Your Trip

Chapter 2: Training

- First Aid
- Leadership Skills
- Basic Outdoor Skills
- Leave No Trace & Outdoor Ethics
- Specialized Skills, including:
 - Scientific Diving & Boating
 - Climbing or Work at Heights
 - Operating Powered Tools or Equipment
 - Excavating or Trenching
 - Entering Confined Spaces such as Caves, Vaults, Mines
 - Handling Wildlife
 - Clinical Work or Handling Biological Specimens
 - Handling or Transporting Hazardous Materials
 - Use of Drones
- Resources for Specific Areas of Study

Chapter 3: Incident Response & Reporting

- First Aid & Initial Response
- Seeking Medical Care or Other Support
- Incident Reporting to Campus
- Reviewing Lessons Learned

Chapter 4: Best Practices for Trip Leaders & Instructors

Risk Assessment:

- Evaluating the “Accident Potential”
- Developing Conservative Judgement
- Facilitating Safe Group Decision-Making

Effective Communication:

- Set the Tone for a Safe Learning Environment
- Establish Reasonable Expectations/Behavioral Norms
- Brief Your Team Often
- Practice Active Listening
- Resolve Conflict

Appendix

- Common Field Hazards
- Campus Support Resources & Policies
- Collection of Recent Field Fatalities

CHAPTER 1

Planning

Assess potential field hazards

Hazard assessment for field activities may be triggered by various entities, such as via animal protocol review, as part of the research/lab safety program at your campus, or through department procedures. The field hazard assessment tool below provides an overview of resources and hazard mitigation steps for common field activities.

All fieldwork warrants a pre-trip discussion regarding foreseen hazards, appropriate precautions, communication options, and emergency procedures. Additional actions are listed below.

DESTINATION	
<input type="checkbox"/> Will you be traveling more than 100 miles from your home campus/office?	<ul style="list-style-type: none">• Contact Risk Management for insurance requirements.
<input type="checkbox"/> Will you be traveling internationally?	<ul style="list-style-type: none">• Visit Chapman University's Travel Guide for Students
<input type="checkbox"/> Does your "Trip Brief", the CDC, or State Department recommend vaccinations or prophylaxis for your destination?	<ul style="list-style-type: none">• Schedule a medical visit at least 6-8 weeks prior to your trip.
<input type="checkbox"/> Will you be visiting sites with hazardous terrain, climate, wildlife, zoonotic risks, poor sanitation, other environmental hazards, or remote sites with limited services (e.g. more than 30 minutes from emergency medical services)?	<ul style="list-style-type: none">• Complete a Field Safety Plan and review with all participants.• At least one participant should have current first aid training and carry a first aid kit.
<input type="checkbox"/> Does your worksite lack reliable phone service?	<ul style="list-style-type: none">• Include check-in procedures in your Field Safety Plan• Avoid working alone, when possible• Carry field radios or satellite communication device

<input type="checkbox"/> Will you be visiting private property or entering private homes?	<ul style="list-style-type: none"> • Avoid working alone, when possible • Ensure proper approvals/protocols are in place • Carry Chapman University identification • Dress comfortably but professionally • Carry a reliable means of communication and check in with your supervisor regularly
<input type="checkbox"/> Will you be visiting controlled sites such as construction sites or mines?	<ul style="list-style-type: none"> • Request PPE and site access requirements in advance • Carry Chapman University identification • Avoid working alone, when possible • Check-in with site manager/superintendent to understand what other hazards are currently present on the job-site • Contact Environmental Health and Safety (EH&S) if you have any questions
<input type="checkbox"/> Will you be driving to your destination via university rental, university owned vehicle, or personal vehicles?	<ul style="list-style-type: none"> • Review Chapman University’s auto insurance policies for students, faculty, and staff; complete relevant driver safety forms and training as required
<input type="checkbox"/> Will anyone be chartering boats, planes or using other non-commercial means of transportation?	<ul style="list-style-type: none"> • Consult with Chapman University’s Risk Management regarding appropriate insurance and precautions
PARTICIPATION	
<input type="checkbox"/> Are you responsible for students registered in a field course?	<ul style="list-style-type: none"> • Review Ch. 4: “Best Practices for Trip Leaders” and “Campus Resources”
<input type="checkbox"/> Will participants be camping or sleeping in shared dorms, housing, etc.?	<ul style="list-style-type: none"> • Set the tone for a safe trip by discussing expectations and rules before the trip • Carry a participant roster with emergency contact information at all times
<input type="checkbox"/> Will volunteers be helping on your project? <input type="checkbox"/> Will family members, partners, or other companions be travelling with participants?	<ul style="list-style-type: none"> • Register volunteers, family members, partners, or other companions formally; consult with Risk Management

FIELD ACTIVITIES- Specifics to integrate into your Field Safety Plan

<input type="checkbox"/> Working outdoors with temperatures over 80 degrees F?	<ul style="list-style-type: none"> • Complete Heat Illness Prevention training • Carry sufficient water, take breaks in shade • Carry shades or tarps if natural shade is unavailable • Maintain means of communication, awareness of worksite location, and ability to obtain EMS
<input type="checkbox"/> Working in dry vegetation/areas with high fire danger?	<ul style="list-style-type: none"> • Complete fire extinguisher training. Contact Fire and Life Safety for more information. • Carry a fire extinguisher, shovel, and bucket of sand in your vehicle • Consult with Fire and Life Safety
<input type="checkbox"/> Working in cold, possibly wet conditions?	<ul style="list-style-type: none"> • Provide all participants with a recommended gear list including waterproof clothing, boots; layers for insulation, extra dry socks, tarp, etc. • Carry extra blankets or sleeping bag in your vehicle for emergencies
<p>Does work involve:</p> <input type="checkbox"/> Excavating soil more than 4 feet deep? <input type="checkbox"/> Working at heights over 6 feet? <input type="checkbox"/> Entering caves, vaults, mines, or other potential confined spaces? <input type="checkbox"/> Handling or transporting hazardous materials or samples? <input type="checkbox"/> Use of powered tools or equipment? <input type="checkbox"/> Working in loud noise? <input type="checkbox"/> ATVS? <input type="checkbox"/> Snowmobiles? <input type="checkbox"/> Clinical work or handling of biological specimens? <input type="checkbox"/> Handling/trapping wildlife?	<ul style="list-style-type: none"> • Contact EH&S for appropriate hazard assessment, training, and PPE selection • Include training requirements and precautions in your Field Safety Plan or refer to specific procedures, JHAs, etc. • If medical clearance or vaccinations are required, schedule your appointment with Occupational Health at least 6-8 weeks prior to travel (e.g. for use of respirators, working in loud noise, handling bats or other hazardous wildlife)
<input type="checkbox"/> Will anyone be operating Unmanned Aircraft Systems (drones)?	<ul style="list-style-type: none"> • All UAS flights require prior approval and postflight reporting. Contact Risk Management for approval
<input type="checkbox"/> Will anyone be boating (motorboats, kayaks, canoes, or other paddle craft)?	<ul style="list-style-type: none"> • Properly fit Personal Floatation Devices (PFDs) must be worn at all times • Complete a Float Plan for every trip • Complete Boat Safety Training

<input type="checkbox"/> Will anyone be diving?	<ul style="list-style-type: none"> • Complete a Dive Plan for every trip • Complete required diving safety training in order to be approved to dive
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Assemble a written field safety plan

For field work in remote locations - or hazardous work off campus - develop a field safety plan with site information and emergency procedures. Taking the time to compile a thorough safety plan and discuss it with your team will prepare you to more effectively manage risks that arise in the field. It serves as a hazardous assessment tool and



Field Safety Plan

Field Site Location:	Descriptive name of research location (e.g., Carrizo Plain, CA; Tortuguero, Costa Rica)	
Activity Description:	Type, length, and purpose of activity (e.g., hiking 3-4 miles, collecting specimens, etc.)	
Plan Created for:	Name of Research Group / Course / Trip Leader	
Field Team Leaders:	Primary Field Team Leader Name and Phone: Secondary Field Team Leader Name and Phone:	
Date(s) of Travel:	Start date, duration, expected return to campus	
Version	Version number	Date of EH&S approval: Mo-Day-Yr

A field safety plan serves as a tool to document your hazard assessment, communication plan, emergency procedures, and training. This plan should identify hazards, as well as precautions and actions taken to address and mitigate those hazards. Submit your final plan to ehs@chapman.edu.

Instructions:

1. Complete this field safety plan; insert specifics for your site and operations.
2. Complete appropriate training for your site and operations (e.g., first aid, heat illness, task-specific training).
3. Obtain immunizations, prophylaxis, and medical evaluation for your destination, if applicable (schedule 8 weeks in advance). **COVID-19 vaccinations and booster(s) required.**
4. Hold a pre-trip meeting with your group and/or supervisor to review your field safety plan, travel logistics, pack list (including first aid kit), personal safety and security concerns, and any remaining training needs.

Site Information	
Site Information and Location:	*Site Information [Latitude XXXX, Longitude XXXX]*

can include Go/No Go criteria, refer to other protocols or training and be used to brief your field team or course participants on trip logistics and precautions. Developing and using a field safety plan is appropriate for the following activities:

- Conducting field research or teaching field courses off campus,
- Work performed at field stations, nature reserves, or controlled sites. Established site procedures may be available, but should be supplemented with a safety plan for hazards specific to your research or tasks.
- Chapman University’s field safety plan is on [Environmental Health and Safety \(EH&S\) website](#).

Identify appropriate equipment, gear and first aid supplies

Fieldwork often requires travel and work at sites that lack basic services such as plumbed water, reliable communications, or prompt emergency medical services. It’s important during planning to budget for appropriate safety measures. It is appropriate for field safety supplies and training to be budgeted and reimbursable using University research and/or departmental operation funds; regulatory references are cited where applicable.

First Aid Kits

Any excursion into the field should include carrying some basic first aid supplies. There is no perfect first aid kit, but considerations include:

- First aid kits provided in a workplace must be approved by a consulting physician, i.e. a Medical Director or Occupational Health Physician per CCR Title 8 Section §3400 Medical Services and First Aid.
- First aid kits don’t save lives, people do. Get trained and know how to use everything you put in your kit. Contact [Fire and Life Safety](#) for First Aid and CPR training.
- Commercial first aid kits are good starting points. The [NOLS Store](#) and other vendors such as REI and Adventure Medical Kits have options designed for outdoor excursions for various group sizes. For educational excursions, you may use the coupon code *Educate2018* to receive 15% off of first aid supplies and books at the NOLS Store. This code may be used as many times as you need, and they are planning to update the last digits of this code at the beginning of every calendar year (Educate2017, 2018, 2019...).
- Customize your kit for your destination, tasks, group size and level of training.
- Pack extra gloves!

- Re-pack your first aid kit for each trip; replenish used or expired items.
- Check for expiration dates on first aid kit items; replace items that may have been torn open or damaged. Many vendors sell refill kits.
- Leave an empty plastic bag in your kit for trash. Be strict with all users of the kit to use the trash bag.

Important safety equipment to bring in the field

List required PPE, equipment and recommended clothing/gear in your Field Safety Plan. For remote, outdoor work don't forget "outdoor essentials":

- First aid kit
- Map, compass, GPS
- Charged cell phone, field radios, satellite phone/device or personal locator beacon; extra battery or charger
- Extra water and/or water purification methods
- Extra food/snacks
- Hats, sunscreen, sunglasses
- Emergency shelter, e.g. shade canopy or lightweight tarp, bivvy sack or emergency space blanket
- Appropriate footwear and clothing, layers
- Flashlight or headlamp
- Matches or fire starter
- Signal/mirror, whistle
- Knife or multi-tool; duct tape for basic repairs
- Your field safety plan with emergency procedures, other protocols if applicable
- Other equipment specific to your class or project



Important safety equipment to bring in your vehicle

Adapted from "Field Safety in Uncontrolled Environments":

- Jumper cables, tire gauge, spare tire, jack, tow rope
- Printed map, directions
- Charged cell phone, charger
- Flashlight or headlamp
- Tools: pliers, screw driver, hex wrenches, shovel
- Useful supplies: duct tape, super glue, bungee cords, large plastic bag
- PPE: nitrile gloves, grip gloves, safety glasses, reflective vests
- Fire extinguisher, shovel, bucket of sand (for work in dry vegetation with any type of ignition source/spark)
- Space blanket, sleeping bag, and/or extra dry clothing (for cold or wet field sites)
- Extra first aid kit, water, snacks

Complete other forms/documentation

- Relevant permits (such as scientific collecting permits, animal use protocols)
- Participant medical forms, if applicable
- Liability waivers, if applicable (consult with [Risk Management](#) for guidance)
- Copies of drivers' licenses, driver authorization forms (if applicable)
- Copies of passports for all participants on international courses/trips
- Copies of medical prescriptions (if applicable)
- Include a participant list with emergency contacts as part of your field safety plan, dive plan, or float plan

Consider Transportation Options and Precautions

Modes of travel as well as vehicles or equipment used at your field site should be included in your field safety plan, along with any prerequisite training or required work practices. Contact [Risk Management](#) or [EH&S](#) for assistance. Related resources include:

- [Chapman University Auto Insurance Policy](#)
- Multiple vendors offer off road/4x4 training within California and have led custom (behind the wheel) classes for field researchers and staff; contact EH&S office for more information.
- Contact Risk Management regarding insurance if chartering boats, planes, or using other noncommercial modes of transportation.



Communicate with participants before your trip

Your students/field team members need to be physically, mentally and logistically prepared for their field experience. Help prepare your participants to have a safe experience:

- Schedule an orientation “pre-trip” meeting before heading out in the field.
- Send or give your participants information regarding your course or project. This can include a personal equipment list, a description of what to expect, a participant medical form, syllabus, waivers and contact information of leaders and other participants.
- Review your Field Safety Plan, expected hazards and conditions, security concerns, code of conduct, and travel logistics.
- Encourage participants to get medical procedures (including dental procedures) taken care of before extended field excursions.
- Initiate direct communication with your participants. It may be necessary to talk directly with participants beforehand to determine whether a field class or research expedition is the right choice for them.

Chapter 2

Training

Mentoring is essential to transfer knowledge and practical skills from experienced faculty, staff and researchers to new researchers and students, and is often provided informally. However, documented training is a critical part of our University safety programs in order to comply with regulatory requirements, accrediting agencies, and in many situations, funding organizations. Commercial trainers typically provide documentation via a certification that an individual should maintain and be able to provide upon request, e.g. a first aid card. Safety training is typically documented centrally on campus, usually through LearnUpon. However, departments and research groups or field course instructors can integrate training on safe practices into lab meetings, hands-on demonstrations, or field lectures, and document completion via a simple sign-in form. It also is appropriate to list required training as prerequisites in a Field Safety Plan that is reviewed and signed by all participants. Field-related training typically falls into two categories:

1. Preparation for working at remote sites, and
2. Specialized “task-based” training directly relevant to field activities

First Aid Skills

First aid training is appropriate for working off campus and at remote field sites because emergency medical services may be limited or delayed. Additionally, Cal/OSHA ([Title 8 §3400. Medical Services and First Aid](#)) requires first aid supplies and persons trained to render first aid “in the absence of an infirmary, clinic, or hospital, in near proximity to the workplace.” Contact [Fire and Life Safety](#) for CPR/AED-First Aid Training.

Wilderness first aid training is appropriate for outdoor fieldwork or visiting remote sites because it covers more first responder information and relevant scenarios than typical 4-hour community first aid classes. There is no adequate substitute for getting this training. The largest wilderness medicine training provider in the U.S. is the National Outdoor Leadership School (NOLS). The [2-day Wilderness First Aid \(WFA\)](#) course and [10-day Wilderness First Responder \(WFR\)](#) course are both taught at numerous UC campuses. Other training providers within California include [Sierra Rescue](#), [Wilderness Medicine Associates](#), and [Foster Calm](#). For trip leaders, field scientists, or students that plan to pursue a career doing outdoor work, WFR training is highly-regarded professionally and will prepare individuals to manage a broad-range of emergency situations, illnesses, and injuries.



Leadership Skills

Facilitating field research or teaching field classes can require leadership skills that go beyond the expectations of a lab instructor or classroom teacher. This manual attempts to provide a comprehensive resource for helping instructors learn more of these skills. An excellent written resource is the NOLS Leadership Educator Notebook, which can be ordered from the [NOLS \(www.nols.edu\)](#).

Basic Outdoor Skills

Working in the field can require knowledge of many outdoor skills, such as map-reading, compass use, cross country navigation, camping, cooking over a fire or with a camp stove, field sanitation practices, and treating drinking water.

Campus outdoor recreation programs may be able to help provide additional training in these skills or provide referrals, e.g. outdoor skills workshops are offered on many campuses. An example of a noteworthy training model includes the [University of Alaska Fairbanks Field Safety 101](#).

Leave No Trace & Outdoor Ethics

Many field sites are fragile and can easily be damaged by even light use. It's important, whenever possible, to adopt field practices that minimize lasting negative impacts. The national educational program called [Leave No Trace \(www.lnt.org\)](#) has developed a set of principles that can be generally applied when working in wilderness conditions. More guidelines are available for specific habitats (e.g. river, deserts, etc.) and areas outside the United States on the LNT website and describe how to adhere to the following seven LNT principles:

- Plan Ahead and Prepare
- Travel and Camp on Durable Surfaces
- Dispose of Waste Properly
- Leave What You Find
- Minimize Campfire Impacts
- Respect Wildlife
- Be Considerate of Other Visitors

Specialized “Task-Based” Skills

In order to make accurate risk assessments in the field, you need knowledge about specific hazards. For instance, if you don't understand what causes an avalanche, you can't possibly accurately decide when, where, and how to safely travel on steep snow. Get the training you need in the specific skill areas where you'll need to do risk assessment. Even a little training can go a long way towards making more accurate assessments and performing safer actions in the field. Mentoring is critical to transfer knowledge and practical skills from experienced faculty and researchers to new researchers and students. Brief your team often - at the beginning of an activity and as conditions change.

Boating – Motorboats, kayaks, canoes, rafts, other paddle craft

As of January 1, 2018, a California Boater Card is required for boat operators in California. The Motorboat Operator Training Course (MOTC) goes beyond recreational boating requirements and includes hands-on instruction on fire extinguishers, knots, trailers, radios, distress signals, Personal Float Devices (PFDs), rescue, boat maintenance, and boat operation. Kayaks, canoes, rafts and other paddle craft are commonly used for field activities and research projects. Properly fit PFDs must be worn at all times and a Float Plan should be completed *for every trip*. Consult with EH&S for guidance. Guidelines, checklists, and Float Plan templates are also compiled on the Scientific Boating Safety Association website ([scientificboating.org](#)).

Climbing or Work at Heights

Falls from height are consistently among the top causes of work-related fatalities in the U.S. Climbing trees, towers, or other structures; using ladders or lifts like “cherry pickers”; or other work at height or near edges or cliffs all warrant careful review of equipment and safe practices. Consult with the EH&S department to obtain appropriate training. Full-body harnesses, helmets, and other safety gear must also be properly fit, diligently inspected, and properly used to avoid injuries and ensure compliance with Cal/OSHA regulations. Please note: seat harnesses commonly used for sport rock climbing with dynamic (elastic) rope are not acceptable for working

at heights because of the potential to be suspended upside down and because they are not designed to absorb shock after a fall as full-body harnesses used in conjunction with shock absorbing fall arrest systems are designed to do. Compliant full body harnesses have a dorsal D-ring to attach fall arrest systems and/or to be used during rescue.

Operating Powered Tools or Equipment

In general, consult with Environmental Health and Safety prior to using powered tools or equipment (including ATVs and snowmobiles). Follow manufacturer's instructions and keep a manual accessible. Prerequisites and safe work practices for use of powered tools or equipment should be documented in your Field Safety Plan; in some situations, referring to specific manuals or Job Hazard Analysis (JHA). A JHA (sometimes referred to as a JSA or Job Safety Analysis) is the breaking down of a job into its component steps and then evaluating each step, looking for hazards. Each hazard is then corrected, or a method of worker protection (safe practice or PPE) is identified. Additional requirements for worker training, certification, authorization, etc., may be identified for the process or job. The final product is a short written document, a standard of safe operation for a particular job.

Excavating or Trenching

Hazards related to excavating or trenching include:

- physical hazards from use of digging equipment or being trapped/buried by collapsing soil;
- respiratory hazards caused by disturbing soil that contains *Coccidioides* fungi (which causes Valley Fever) or other environmental contaminants,
- and trips/falls if the edge is not clearly flagged or protected. Excavations greater than 4 feet deep trigger Cal/ OSHA regulatory requirements for evaluation and shoring. Consult with your EH&S office for guidance and to establish safe work practices.

Entering Confined Spaces such as Caves, Vaults, or Mines

Hazards related to entering confined spaces include:

- physical hazards from unstable structural integrity, low overhead clearance,
- respiratory hazards from unsafe environmental conditions, such as hydrogen sulfide gas or lack of oxygen,
- and increased risk due to access limitations, unreliable communications, and isolated, often dark and rugged/ uneven conditions.



Consult with your EH&S office for confined space entry training and to establish safe work practices. It is a standard precaution for workers to wear a hardhat, headlamp, and carry a 4-gas meter (that measures hydrogen sulfide, combustible gas, carbon monoxide, and oxygen levels simultaneously) to verify safe conditions and adequate oxygen levels *prior to entry* into a confined space.

Handling Wildlife

Wildlife biologists face environmental hazards in the field, as well as risk of zoonotic and vector-borne diseases and the physical threat of a wildlife attack or bite. During required institutional review of animal protocols, best practices for trapping or darting of wildlife should be adopted, but broader field hazards should not be ignored. As with all

fieldwork, working alone, extreme weather conditions, unreliable communications, and limited or delayed emergency medical services may exacerbate any research-related incidents.

It is standard precaution for gloves to be worn when handling any wildlife, and additional controls are warranted for species that transmit life-threatening diseases, e.g. wearing a respirator for handling deer mice (hantavirus), or getting a rabies vaccination for handling bats or other carriers. For animal procedures requiring hands-on demonstration and training, consult with the Campus Biosafety Officer and/or Veterinarian for guidance and never perform work that is not specifically approved by the [Institutional Animal Care and Use Committee](#) (IACUC).

Clinical Work or Handling Biological Specimens

Clinical work or collecting/handling human biological specimens should be covered under an Exposure Control Plan that includes careful consideration of vaccinations, safe work practices, appropriate PPE, post-exposure prophylaxis, and incident reporting. Cal/OSHA requires that employees that may be exposed to human blood, bodily fluids, or cells be provided Bloodborne Pathogen Training and offered Hepatitis B vaccination at no cost. Consult EH&S Biosafety Officer for guidance.

Transporting Hazardous Materials, Hazardous Waste, or Biological Specimens

Moving regulated hazardous materials can be complex. Most biologicals are not stable for shipping and are typically stored in dry ice or liquid nitrogen. DHL offers a [Shipping Dangerous Goods](#) option. [World Courier](#) handles infectious materials and replenishes dry ice. They also keep materials in pressurized cabins, and forgo x-rays. [Cryoport](#) and [FedEx](#) will ship a liquid nitrogen vapor carrier internationally.

Regulated Hazardous Materials include:

- Infectious and biological substances
- Genetically modified organisms or micro-organisms
- Chemicals
- Radioactive materials
- Compressed cylinders (whether filled or empty)
- Dry ice
- Liquid nitrogen
- Certain batteries
- Equipment containing batteries (including but not limited to PCs, tablets, cell phones and eVapor cigarettes)
- Gasoline
- Ethanol

Anyone shipping hazardous materials should consult with your EH&S office for guidance on required training and labeling.

Use of Drones (Unmanned Aircraft System)

All UAS flights require prior approval and post-flight reporting. Contact Risk Management to request approval for flying drones.

Safety Resources for Specific Areas of Study

Agriculture/Rural Studies:

UC Agriculture and Natural Resources (UC ANR) provides excellent "[Safety Notes](#)" for a variety of outdoor and field activities

Geology/Earth Sciences:

- [Safety & Health for Field Operations](#) (USGS)

Wildlife Biology:

- [Guidelines for use of wild animals in research and teaching](#) (American Society of Mammologists)
- [Science Guidelines](#) (American Fisheries Society)
- [Precautions for Zoonotic Disease Prevention in Veterinary Personnel](#) (National Association of State Public Health Veterinarians)
- [Fish & wildlife training modules](#) (Canadian Council on Animal Care)
- [Health Risks for Marine Mammal Works \(UC Davis Vet Medicine, 2008\)](#)
- [Disease Precautions for Hunters \(AVMA\)](#)

Archeology, Paleontology, Anthropology, Others:

Health and Safety for Museum Professionals (SPNHC)

Working Alone Off-Site (CCOHS Fact Sheet):

- http://www.ccohs.ca/oshanswers/hsprograms/workingalone_offsite.html

Chapter 3

Incident Response & Reporting



It's impossible to foresee all injuries or incidents that may occur when working in uncontrolled environments, but first aid skills and having emergency plans in place will help manage situations effectively and potentially mitigate negative consequences. Once a situation is stable and urgent medical care needs are met, report incidents to campus to trigger University support and evaluation. Reporting procedures, as well as mechanisms to debrief and review lessons learned, are outlined below. As a University, we must also comply with a variety of reporting regulations, including but not limited to, reporting of injuries and

fatalities to Cal/OSHA, Title IX reporting of sexual harassment and criminal behavior, environmental releases or spills, and loss/theft/misuse of research materials or funds. Related campus-specific policies and resources are listed in the appendix.

First Aid & Initial Response

This chapter outlines established protocols for first aid reference, but in no way is a replacement for maintaining current first aid certification. First aid training includes valuable hands-on practice that cannot be replicated in any other way. Keep your certs current! Refresher training and practice is vital to maintain competency in first aid. In California, it is the intent of the Good Samaritan Law to encourage individuals to volunteer to assist others in need during an emergency, but only provide treatment within the scope of your training level and never abandon a patient.

Life-Threatening Injuries or Illness

Call 911 or seek medical care immediately. Always know your physical location; everyone in your group should be able to provide Emergency Medical Services (EMS) accurate directions to the field site.

Basic First Aid

By administering immediate care during an emergency, you can help an ill or injured person before EMS arrive. A variety of useful references can also be downloaded to your smartphone (and are then accessible without cell or wifi service) such as the Emergency Medical Response Guide or “EMR Guide” from the National Safety Council and “First Aid” from the American Red Cross. Both are available free from the App Store.



First Aid Steps (adapted from the American Red Cross¹):

1. Scene Size Up

Before administering care to an ill or injured person, check the scene and the person. Size up the scene and form an initial impression. Pause and look at the scene and the person before responding. Answer the following questions:

- Is the scene safe to enter?
- What happened?

¹ American Red Cross “First Aid Steps”, accessed at <https://www.redcross.org/take-a-class/first-aid/performing-first-aid/first-aid-steps>.

- How many people are involved? - What is my initial impression about the nature of the person's illness or injury?
- Does the person have any life-threatening conditions, such as severe, life-threatening bleeding?
- Is anyone else available to help?

2. Awake and Responsive

If the Person is Awake and Responsive and there is no severe life-threatening bleeding:

- Obtain consent: Tell the person your name, type and level of training, what you think is wrong and what you plan to do, and ask permission to provide care.
- Use appropriate PPE: Put on gloves.
 - Interview the person: Use the acronym **SAMPLE** to gather more information about **S**igns and symptoms, **A**llergies, **M**edications, **P**ertinent medical history, **L**ast food or drink and **E**vents leading up to the incident.
- Conduct a head-to-toe check: Check head and neck, shoulders, chest and abdomen, hips, legs and feet, arms and hands for signs of injury.
- Provide care consistent with knowledge and training according to the conditions you find.

3. If the Person Appears Unresponsive

Shout to get the person's attention, using the person's name if it is known. If there is no response, tap the person's shoulder (if the person is an adult or child) or the bottom of the person's foot (if the person is an infant) and shout again, while checking for normal breathing. Check for responsiveness and breathing for no more than 5-10 seconds.

4. If the Person is Breathing

Send someone to call 911 or the designated emergency number and obtain an AED and first aid kit.

- Proceed with gathering information from bystanders using the **SAMPLE**² questions.
- Conduct a head-to-toe check.
- Roll the person onto his or her side into a recovery position if there are no obvious signs of injury.

5. If the Person is NOT Breathing

- Send someone to call 911 or the designated emergency number and obtain an AED and first aid kit.
- Ensure that the person is face-up on a firm, flat surface such as the floor or ground.
- Begin CPR (starting with compressions) and use an AED if one is immediately available.
- Continue administering CPR until the person exhibits signs of life, such as breathing, an AED becomes available, or EMS or trained medical responders arrive on scene.

Note: End CPR if the scene becomes unsafe or you cannot continue due to exhaustion.

² SAMPLE: Acronym reminder for asking about Signs/symptoms, Allergies, Medications, Pertinent Medical History, Last Ins/Outs, Events leading up to the incident

CPR/AED Instructions

The 2017 American Heart Association Guideline Updates³ continue to recommend that lay rescuers trained in CPR give chest compressions and rescue breaths at a ratio of 30:2 for adults in cardiac arrest. The same 30:2 ratio is advised for pediatric cardiac arrest⁴; but if a second rescuer can assist, a 15:2 ratio should be followed.

The table below shall be used as a reference guide; it is not a substitute for valuable hands-on training.

Basic First Aid Reference Table⁵⁶⁷

Control bleeding	Put on gloves. Cover the wound with a dressing, and press firmly against the wound (direct pressure). Elevate the injured area above the level of the heart if you do not suspect that the victim has a broken bone. Cover the dressing with a bandage. If the bleeding does not stop, apply additional dressings and bandages, and use a pressure point to squeeze the artery against the bone. Provide care for shock.
Care for Shock	Keep the victim from getting chilled or overheated. If the person is awake and doesn't have a head, neck, spine, or leg injury elevate the legs about 12 inches (if broken bones are not suspected or if it doesn't cause pain). Do not give food or drink to the victim. Make sure the person is warm and comfortable and loosen any tight clothing.
Burns	For minor burns, reduce pain by gently cooling the burn with cool (not cold or ice) water. Cover the burn with a sterile gauze bandage or clean cloth. Wrap the burned area loosely to avoid putting too much pressure on the burn tissue. Do not apply any ointments or other remedies. For second- or third-degree burns, contact emergency health care.
Muscles, bones, and joint injuries	Rest the injured part. Apply ice or a cold pack to control swelling and reduce pain. Avoid any movement or activity that causes pain. If you must move the victim because the scene is becoming unsafe, try to immobilize the injured part to keep it from shifting.
Poisoning	Call the Poison Control Center (1-800-222-1222) and communicate what was swallowed and how much. Follow the directions given exactly.
Allergic reaction	Allergic reactions range from mild (e.g. hay fever) to severe (e.g. anaphylaxis). Anaphylaxis (an-a-fi-LAK-sis) is a serious, life-threatening allergic reaction. The most common anaphylactic reactions are to foods, insect stings, or medications. More specific response actions outlined below.
Heat Illness	Heat exhaustion is the most common type of heat illness. Move to a cool, shaded place; hydrate with cool water. If no improvement, call 911 and seek medical help. Do not return to work in the sun. Heat exhaustion can progress to life-threatening heat stroke. More specific response actions outlined below.

⁶ Cal/OSHA Heat Illness Prevention and Response accessed at <https://www.dir.ca.gov/dosh/HeatIllnessInfo.html>

⁷ NIOSH Cold Stress First Aid, accessed at <https://www.cdc.gov/niosh/topics/coldstress/coldrelatedillnesses.html>

Hypothermia	Move the victim into a warm room or shelter and remove wet clothing. Warm the center of their body first—chest, neck, head, and groin—under loose, dry layers of blankets, clothing, towels, or sheets. Warm beverages may help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person. After their body temperature has increased, keep the victim dry and wrapped in a warm blanket, including the head and neck. If victim has no pulse, begin cardiopulmonary resuscitation (CPR).
Frostbite	Get into a warm room or shelter as soon as possible. Unless absolutely necessary, do not walk on frostbitten feet or toes—this increases the damage. Immerse the affected area in warm—not hot—water (the temperature should be comfortable to the touch for unaffected parts of the body). Warm the affected area using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers. Do not rub or massage the frostbitten area; doing so may cause more damage. Do not use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.
Other Environmental Injuries	Signs/symptoms and treatment are described thoroughly in the reference NOLS Wilderness Medicine 6th edition by Tod Schimelpfenig (2016) for altitude sickness, lightning, stings and bites, and cold water immersion. As these types of injuries occur infrequently, it's important to carry a wilderness medicine reference with you; a condensed field version is typically provided during wilderness first aid training.

Anaphylaxis

Allergic reactions range from mild (e.g. hay fever) to severe (e.g. anaphylaxis). Anaphylaxis (an-a-fi-LAK-sis) is a serious, life-threatening allergic reaction. The most common anaphylactic reactions are to foods, insect stings, or medications. Symptoms may develop immediately, rapidly progress over minutes, or develop slowly over hours. Anaphylaxis requires immediate medical treatment, including a prompt injection of epinephrine and a trip to a hospital emergency room. If it isn't treated properly, anaphylaxis can be fatal.¹

Note: Epinephrine requires a medical prescription. Individuals with known allergy may carry their own epinephrine auto-injector, typically in a two-pack. California law does allow trained “lay rescuers” to carry epinephrine auto-injectors in first aid supplies and administer to a person experiencing anaphylaxis, but the “lay rescuer” must have a current Epinephrine Certification Card issued by the State of California Emergency Medical Services Authority and meet all other requirements of UC’s Epinephrine Auto-Injector Program. In all situations when an epinephrine auto-injector is administered, the patient must immediately be taken to an emergency room for medical evaluation.

Signs and Symptoms of Anaphylaxis may include⁸:

- Red rash, with hives / welts, that is usually itchy*
- Swollen throat or swollen areas of the body
- Wheezing
- Passing out
- Chest tightness
- Difficulty breathing, cough

⁸ American Academy of Allergy, Asthma, and Immunology, accessed at <http://www.aaaai.org/conditions-and-treatments/allergies/anaphylaxis>

- Hoarse voice
 - Difficulty swallowing
 - Vomiting
 - Diarrhea
 - Stomach cramping
 - Pale or red color to the face and body
 - Feeling of impending doom
- *It is possible to have a severe allergic reaction without skin symptoms

First Aid Response to Treat Anaphylaxis

1. Contact EMS by calling 911.
2. If possible, separate the patient from the allergen.
3. If the patient can speak and swallow, give oral antihistamines (adult dose = 25mg -50mg of Diphenhydramine hydrochloride every 4-6 hours) and continue until EMS takes responsibility for care.
4. Inject epinephrine via auto-injector (adult dose = 0.3mg intramuscular into the upper thigh) for:
 - any airway swelling (lips, tongue, uvula, voice changes)
 - large areas of swelling
 - respiratory compromise or shock
5. If severe allergic reaction continues, administer a second dose of epinephrine via auto-injector.
6. Evacuate to seek emergency medical care for the patient immediately.

Directions for Use of Auto-injectors

1. Never put thumbs, fingers, or hands over the tip of the auto-injector.
2. Wear gloves.
3. Inform the patient of your actions and obtain consent from the patient before administering epinephrine. If unresponsive, implied consent is acceptable in a life-threatening situation.
4. Form a fist around the auto-injector.
5. With your other hand, remove the safety-caps.
6. Jab the auto-injector firmly into patient's outer thigh so that the auto-injector is perpendicular to the thigh.
7. Hold the auto-injector firmly in the thigh for 10 seconds to allow time for the medication to disperse.
8. Remove the auto-injector, and then massage the injection area for several seconds.
9. Store used auto-injectors in their carrying case, inserting them carefully and needle-first into the labeled side.
10. Continuously monitor the patient and immediately seek emergency medical care.
11. As needed, a second dose of epinephrine may be administered 15 minutes after the initial dose.

Additional Guidelines for Auto-injectors

- Become familiar with the auto-injector before the need to use it arises; know where it is physically located.

- Epinephrine should be administered at the first sign of anaphylaxis.
- If a participant or coworker is experiencing signs/symptoms of anaphylaxis, and does not have a prescription for epinephrine, only trained staff with an Epinephrine Certificate Card may administer auto-injector(s) as described in their emergency action plan.
- ANY administration of epinephrine, intentional or accidental, initiates an evacuation to emergency medical care.
- Protect auto-injectors from heat/light and do not refrigerate.
- Replace and do not use auto-injectors if the solution is discolored, cloudy, or contains particles.

Heat Illness

First Aid—Signs & Symptoms of Heat Illness		
Signs & Symptoms	Treatment	Response Action
<p>HEAT EXHAUSTION</p> <ul style="list-style-type: none"> • Dizziness, headache • Rapid heart rate • Pale, cool, clammy or flushed skin • Nausea and/or vomiting • Fatigue, thirst, muscle cramps 	<ol style="list-style-type: none"> 1. Stop all exertion. 2. Move to a cool shaded place 3. Hydrate with cool water. 	<p>Heat exhaustion is the most common type of heat illness. Initiate treatment. If no improvement, call 911 and seek medical help. Do not return to work in the sun. Heat exhaustion can progress to heat stroke.</p>
<p>HEAT STROKE</p> <ul style="list-style-type: none"> • Disoriented, irritable, combative, unconscious • Hallucinations, seizures, poor balance • Rapid heart rate • Hot, dry and red skin • Fever, body temperature above 104°F 	<ol style="list-style-type: none"> 1. Move (gently) to a cooler spot in shade. 2. Loosen clothing and spray clothes and exposed skin with water and fan. 3. Cool by placing ice or cold packs along neck, chest, armpits and groin (Do not place ice directly on skin) 	<p>Call 911 or seek medical help immediately.</p> <p>Heat stroke is a life threatening medical emergency. A victim can die within minutes if not properly treated. Efforts to reduce body temperature must begin immediately!</p>

Psychological First Aid

Psychological First Aid⁹ is basic, pragmatic support for victims, survivors, and responders who exhibit acute stress response following trauma, violence, or disasters. The intent is to recreate a sense of safety, ensure basic physical needs are met, and protect the patient from additional harm:

- Help people meet basic needs for food, shelter, and first aid
- Offer accurate information about the situation and rescue efforts
- Give practical suggestions that steer people toward helping themselves
- Help people contact friends and loved ones and direct people to support services.

⁹ NOLS Wilderness Medicine 6th edition, Tod Schimelpfenig, 2016, p. 304.

Seeking Medical Care or Other Support

Campus Services

Note campus emergency services, occupational health and travel clinics, confidential care advocates, counseling, and after hours advice nurse consultation or referral numbers and resources in advance in a written field safety plan carried in the field.

During Travel

Directions and contact information for nearby medical services should be identified in advance and included in your field safety plan. For international travel, the US State Department and embassy websites provide guidance on finding a doctor or hospital while abroad¹⁰.

Incident Reporting

Immediately report all work-related fatalities, catastrophes, serious injuries or illnesses to your supervisor and campus department. Supervisors/departments are responsible for promptly reporting incidents to Enterprise Risk and Safety and completing the [incident and accident investigation report](#). Ideally, specific emergency contact numbers and incident reporting procedures are clearly outlined in written field safety plans carried in the field. Consider carrying appropriate incident report forms and a copy of your field safety plan in your first aid kit.

Lessons Learned

By reporting and reviewing incidents among field teams, departments, and with campus staff, lessons learned can benefit a broader group and help improve our operations. We all recognize that injuries happen when working outdoors in uncontrolled environments but want to strive toward being prepared, making safe decisions in the field, and minimizing the negative consequences when incidents occur.

Your department safety committee or coordinator, EH&S staff, research oversight committees, or other personnel on campus may be involved in accident investigation and review of lessons learned.

Near-Misses and Improvements

Ideally, all field projects and courses include an opportunity for debrief, even when no unintended incidents occur. Discussion of project goals, challenges, and logistics can often identify clear improvements and planning needs for subsequent fieldwork.

¹⁰ US State Department: <https://travel.state.gov/content/travel/en/international-travel/before-you-go/your-health-abroad.html>

Chapter 4

Best Practices for Trip Leaders

This chapter has been adapted from guidance compiled by Christopher Lay at the Ken Norris Center for Natural History (UCSC) and the NOLS Leadership Educator Notebook is divided into two important sections: [Risk Assessment](#) and [Effective Communication](#). Trip leaders of all experience levels can benefit from these strategies to set the tone for a safe trip and manage situations that arise. It's impossible to prepare for all scenarios that may unfold when working in uncontrolled environments, but consideration of both objective and subjective factors are critical to manage incidents in the field.

Risk Assessment

Evaluating the “Accident Potential”

Always ask yourself: If we get into an accident right here, could I justify my actions and decision-making when I describe this back home? Two forces overlap when most accidents occur:

- **Objective factors:** These are environmental hazards presented by the natural world, such as weather, darkness, falling rocks, moving water, lightning, snow, exposure, avalanche, cold, hot, or deep water, etc.
- **Subjective factors:** These are human characteristics that often play a role when accidents occur. They include complacency, overconfidence, distraction, differing perception of risk, expectations and peer pressure, fatigue, stress, haste and lack of competence.

Developing Conservative Judgement

Judgment is the logical reasoning we use to help us decide what to do in a new situation. It's based on our experience and personal reflection that leads to an insight or changed behavior that you carry forward with you. A few important points to remember about developing conservative judgment:

- Experience alone does not develop conservative judgment! Plenty of people take the same extreme risks over and over again. Reflection from one's experience that leads to a modified future action is just as important as experience.
- We are going to make mistakes – the key is to learn from them.
- There are better and worse times to make mistakes – you don't want to push your limits when you're leading a group. Do this on your own time.
- It's good for beginners to have simple clear “unbreakable” rules, such as: never climb a peak after noon in the mountains (because of lightning strike potential). Over time, your judgment will help you develop more nuanced rules.
- Often you must follow policies set forth by your organization that may conflict with what your judgment tells you to do. Follow your protocols.
- Sometimes you don't have the experience to use good judgment – it is okay to stop and not do something.
- Supervisors don't typically get upset if you're “too safe”, but people will get upset (and potentially hurt!) if you get in over your head.

Use the Equation: Risk = Likelihood*Consequences of an Accident Occurring

		Likelihood of an Accident	
		Low	High
Consequences of an Accident Occurring	Low	GO! This is an acceptable risk!	GO? Can you mitigate this before proceeding? Is your group developing solid skills, good safe decision-making and self-awareness?
	High	STOP? Lean towards avoiding these, but can you mitigate situation to lessen the consequences? If so, this could turn to a go.	STOP! Avoid these situations!

This graphic depicts the Go/No Go concept integrated into our field safety plans. Some conditions may be clear “No Go” situations, e.g. lightning, high waves, extreme heat, washed out roads, etc., but many challenging field situations will fall into the “amber” boxes.

Facilitating Safe Group Decision-Making

As a field leader, you have to accurately assess risks, mitigate hazards and carry out safe actions. You also have to facilitate your group making safe decisions together. This can be challenging and requires both competency in risk analysis as well as solid communication and leadership skills. With this in mind, consider the following four ways that groups make decisions:

- **Directive:** The leader decides and informs the group.
- **Consultative:** The leader decides after consultation with the group. This can happen two different ways: the leader might first solicit input from the group and then decide or the leader might tentatively decide and get input and reaction from the group before making the final decision.
- **Group decides:** All group members (including the leader) contribute equally to the decision-making process. This could happen through a vote or through consensus.
- **Delegation:** Leader delegates the decision-making to the group after defining the appropriate boundaries and conditions. Before delegating, the leader must feel comfortable with any decision made.

Many experienced leaders employ all of these decision-making styles depending on the situation and the expertise of their groups. By doing so, leaders help maintain a safe learning environment while at the same time helping groups take ownership and responsibility for their collective experience.

Effective Communication

Set the tone for a safe learning environment

The success and overall safety of a team is more associated with the quality of its leadership, teamwork and communication than it is with its overall skill level. Teams don't magically happen. They are consciously built by the actions of both leaders and participants. Before any risky situations arise, it's important to develop and practice good teamwork and communication within your teacher/leader team and student/research group.



As a leader/teacher, you have enormous influence over how well (and how safely) your team will perform. Below are several key communication actions you can employ to help you more effectively steer your group in a safe positive direction.

Establish and maintain reasonable goals, roles, expectations/behavioral norms

As a leader of your group, you have the most influence over creating a culture of safety within your group. By far, the most leverage you have is at the beginning of your class/trip. All of your group's future endeavors are made easier or more challenging by the effectiveness of these first interactions. Two important meetings should occur at this early stage:

- Meet with your leader/teaching team prior to the beginning of your class/trip to discuss your leadership roles as well as personal and course objectives.
- Facilitate an orientation pre-trip meeting with your whole group as early as possible to establish clear goals, roles, expectations and behavioral norms.

The following is a suggested format you could use for a discussion about creating a safe learning environment for *undergraduates* participating in a *multi-day field class*. This discussion should happen as early on in the course as possible. This can easily be modified or shortened for less-involved field experiences or different participants. Regardless, this discussion is one of the key leverage points that leaders have over the general trajectory that their group will follow during their time together. Don't skip it.

- **Introduction:** Living and studying outside will pose significant challenges for all of us. A big part of this challenge is how we work together as a group - how we communicate, cooperate, problem-solve and support one another. This course is different (and much more) than a regular academic experience - we learn together but we also live together and can't get away from each other when we're in the field. We have the responsibility both before and during the course to co-create a safe, positive learning environment. The rewards of building and maintaining a safe, supportive community are huge. Your own learning goals will be magnified when we actively work to support each other.
- **Explicitly State Leader Expectations:** With this in mind, it is important to specify and build consensus around what it takes to maintain a safe positive learning environment. Let's spend time now as a group discussing this and getting everyone's input. For now, consider the following general aspects that we as the leaders of this course have found useful in creating a safe positive learning environment:
 - You can expect us (your leaders) to instruct this course. But you can also expect us to respect you for who you are, to support you both physically and emotionally, to give and receive constructive feedback, and ultimately to provide a safe learning environment for you and the group as a whole.

- We will expect all of you:
 - to respect one another
 - to practice proactive self-care; check in with us about medical concerns and other concerns you may have
 - to follow our lead & follow the rules
 - to participate fully (be on time, get out of bed, speak up in discussions, take part in activities)
 - to teach and learn from one another (take pride in what you bring to the group and support others in what they bring too)
 - to be open minded and ready to learn (all the time, even when you're tired, when you're in the van)
 - to take initiative to try new things (peer leadership)
 - to work together as a team (you don't have to like everyone, but you do have to work together effectively. Sometime this means taking a leadership role, sometimes it means supporting one of your peers who takes a leadership role.)
 - to be willing to sacrifice some personal goals for the sake of the group (you may need to speed up/slow down, turn around on a hike, speak up more, listen more, modify your level of sarcasm/joking to fit with the norms of the group, etc.)
 - to give and receive constructive feedback
 - to provide a safe learning environment for everyone
 - to put your whole self in to the experience
- Get input from your group: Take some time to discuss in smaller groups anything else the student group thinks is important to maintaining a safe learning environment. Then discuss as a whole group, letting as many participants share what they talked about. Acknowledge everyone for listening and sharing.
- Explicitly go over the important rules. Here are some common rules/issues that you might consider specifically addressing:
 - Personal physical safety - no hiking alone, no rock climbing, swimming guidelines, etc. You must wear your seatbelt in the van whenever we're driving. You likely don't have time to discuss all of these right at the beginning, but introducing them lets your group know that you think they're important. You can say that you will come to these in more detail once out in the field.
 - Emotional safety
 - Sexual harassment: Harassment can include "sexual harassment" or unwelcome sexual advances, requests for sexual favors and other verbal or physical harassment of a sexual nature. Harassment does not have to be of a sexual nature, however, and can include offensive remarks about a person's sex. The university tolerates zero harassment and as employees, we are mandated reporters.
 - Avoid jokes, sarcasm, or insulting remarks: about individuals or groups of people, whether or not they are represented on this course.
 - Aggression: Avoid either verbal threats or motion to harm others in the present or future.
 - Language: Keep the course relatively free of bad language.
- Alcohol and other drugs: This can clearly be a difficult "rule" to establish. Consider bringing up four things with the students: safety, legality, learning and group cohesion.
 - Safety: Clearly drugs and alcohol can compromise safety, which is especially concerning in remote field contexts.
 - Legality: Most drugs are illegal and using alcohol or marijuana if you're under 21 is illegal. Getting caught condoning illegal activities in a university-sponsored field class could cost any leader their job as well as jeopardize the future of the course.

- Learning: Drugs and alcohol can interfere with your ability to learn the material we cover in this course.
 - Group cohesion: The use of drugs and alcohol can often undermine community building within a group. Often, a smaller subset of a group is most comfortable drinking (or perhaps sneaking off and using drugs) and this leads to cliques and dis-unity.
 - After going over these concerns, you might consider two different rules to establish and maintain:
 - No use of drugs or alcohol.
 - Moderate consumption of alcohol only by those of age and only “outside of class time”.
 - Consequences: What if they break the rules? Consider saying something like this: “I am ultimately responsible for maintaining a safe learning environment for everyone out here. If your actions aren’t supporting that ultimate goal, I will request that you change your behavior. I can also separate you from this course.”
 - Final advice: If you set and maintain clear expectations, constantly build rapport and connection with your students, facilitate awesome experiences (without drugs/alcohol), and set a good example yourself, you won’t have trouble with this issue.
- Smoking: Follow the law/rules. In a place where smoking is permissible, smoke outside away from others and throw your butts away (they are not biodegradable). Consider quitting now.
 - Exclusive relationships (including romantic ones): You might say “Get out of your bubble and be inclusive of everyone.” It takes an explicit, deliberate action to be inclusive of everyone - make it a goal to sit some place different tomorrow and strike up a conversation with someone else. The whole experience will be much more meaningful if we come together as a whole group.
 - Cell phones: “Either put your cell phone in airplane mode or turn it off completely during the day. If there are some apps you’re using for class, that’s fine. If you want to make brief phone calls outside of our class time (like after dinner), that’s fine. What we want to avoid is checking out of the present moment and not interacting with the people who are physically present.”
 - Music: “No speakers in the field; music in the van is at the driver’s discretion. Beware listening too much to music using earbuds: it can lead to checking out too much from the group.”
- Removing someone from the course: You might want to give an example of the rare occurrence where someone might separate from the course. Consider saying:
 - If something inappropriate comes up, we will first and foremost talk with that person or people involved.
 - Our goal would be to build understanding, provide additional support and clarification to everyone involved.
 - However, if the inappropriate behavior continues, we could decide to separate a person from the course.
 - Finally, explicitly ask for everyone to follow these guidelines in order to create a safe learning environment: You might say, “Does all this sound good? Can I get a yes or a nod from everyone? If any of this concerns you, please feel free to come to talk with one or all of us after this meeting.”

Brief your team often

Groups operate more safely when they are frequently briefed on what to expect. Brief at the start of the day or activity. Brief when conditions change. Brief when your plans change. Excellent leaders articulate and explain goals as often as necessary. Strive to incorporate these core ingredients into your briefings:

- What are we doing? (What are the goals?)
- How are we doing it? (What’s the plan?)
- When are we doing it? (What’s the timetable?)
- Who is doing it? (What are our roles?)
- What hazards can we anticipate?

- How will we manage those hazards? (What are the contingency plans?)
- What gear do we need?
- How and when will we make decisions?
- How is everyone doing? What concerns do you have?
- What is our plan if someone becomes ill or injured or lost?
- Have I been understood? (If necessary, ask your group to repeat back the information you just gave them.)

Practice active listening

The practice of active listening can help you build a healthy group learning community but also can significantly reduce the likelihood of accidents. When you are actively listening to someone, you are supporting people to think out loud. This builds trust, group intelligence, and greater awareness of a situation or issue. It also helps leaders (and their groups) make safer decisions.

Active listening requires that you:

- be present with your speaker
- do more listening than speaking
- make eye contact and use positive body language
- focus on understanding what someone is saying, not on mentally preparing a response
- avoid interrupting, debating, and quick, preconceived responses

The two cornerstone skills of active listening are Paraphrasing and Drawing People Out:

Paraphrasing

When you paraphrase someone, you say back to the speaker what you think the speaker said in your own words. This is the most straightforward way to demonstrate to a speaker that his or her thoughts were heard and understood. Though simple, paraphrasing is powerful! When done well, it is non-judgmental and enables people to feel that their ideas are respected.

Drawing People Out

When drawing someone out, ask open-ended non-directive questions. This helps the speaker clarify and refine their thoughts. Setting a tone that invites good listening reduces the probability of accidents.

A good leader sets a tone in which participants and co-leaders feel they can speak up, question and share observations without fear of reprisal. Do this by frequently checking in with your instructor team and student group. Strive to follow these guidelines:

- Give adequate time for discussions to avoid giving the impression that your group has nothing to contribute.
- Make eye contact.
- Listen to your team member's responses without interrupting or "talking over" them.
- Ask: "Are you getting enough direction from me about what you need to be doing?"
- Be aware giving the impression that you're really not looking for input.
- Instead of saying, "Okay - you've all done this before. Ready to go?," ask "Hey is anyone not ready?"

- Be aware that silence can be mistaken for agreement. Take the time and create the space for everyone to express their concerns.

Resolving conflict

The potential for conflict is natural among people and is an inherent part of any group's development into a safe, high functioning team. Rather than avoid conflict, effective teams manage conflict productively. While conflicts are okay, unresolved conflicts are not. They impede communication and cooperation, and they can lead to incidents. Conflict often arises when expectations, roles and responsibilities are unclear. Participants may be missing information or lack a sense of the big picture. It's the leader's job to clarify this for your group. When conflict arises, you should see it as a sign that your team may be unraveling. As a leader, you may need to step in, acknowledge the issue and set aside time to work through the conflict. Do this by listening to the different perspectives and opinions, restating or revising roles & expectations and committing to moving forward productively.

Some strategies to consider:

- Approach the student, co-instructor or team member with respect (think connection before correction).
- "I have been noticing.... and I was hoping to talk to you about it."
- "I wanted to bring 'this' up to make sure you are getting what you need to feel good about this class" or....that you, the other students, and the purpose of this course are all supported."
- Clarify your expectations and/or goals for the course. If they are not meeting your expectations or hindering your goals, specify which one(s) they aren't meeting.
- Suggest ways they could meet expectations the next time this situation arises. Don't be afraid to say: "We need everyone to follow these expectations in order to create a safe learning environment for everyone."
- Educate your students about the ramifications of their actions, etc.
- Engage in collaborative problem solving with your student(s).
- Make a plan for checking in again.

Addressing student/participant behavior in the field

Often, one of the most difficult challenges of a field instructor/leader is to address group dynamics and individual behavior that can undermine a positive learning environment for everyone. These challenges may manifest as homesickness/disengagement, alcohol or drug use, poor performance, sexist or racist behavior, or various behaviors that prevent inclusion of everyone. Addressing these issues is a continual process and involves all of the following:

- Setting the tone for a safe positive learning environment
- Using inclusive language: (e.g., use "family" instead of "parents", give students the opportunity to share their preferred gender pronouns when they first introduce themselves to the group)
- Building rapport: Developing positive professional relationships with all students/participants. Give regular positive and constructive feedback, spend time (structured and unstructured) with them, play games, have conversations, ask them questions, set and reinforce boundaries and learn from your students. Make the effort to individually check-in with each of your students/participants at some point during your course/ project. Ask them how they're doing, ask them to give you feedback, and then listen.

Should challenges arise with a student, consider the following options:

- Examine the student's behavior and their individual experience while revisiting the structure and boundaries you set for a safe, positive learning environment, your role as an instructor and the culture created by your group.

- Are their social dynamics at play in your group that isolate, intimidate, or threaten this student?
- What needs of this student are not being met? What could you do to meet them?
- Is this student getting from his/her disruptive behavior? Is there any other way this student could meet their needs in a more productive way?
- Are the boundaries you have created thwarting this student's ability to feel capable, connected, and that their presence matters?
- Make structural changes (such as giving more time for lunch, or taking the afternoon off every once in awhile) that you think might alleviate some of the stress on this student.
- Give verbal feedback and coaching first before written documentation.
- Keep a written behavior log of observations about the student's behavior.
- Be accurate - stick to observations and quotes; avoid speculation, interpretation, and evaluation.
- Be specific, clear, and organized. Use dates, times of day, names, etc.
- Use direct quotes from the student and from their peers - "His peers observed him saying"
- Be brief and avoid redundancy.

If a behavioral issue does not resolve itself after 1-2 days of trying all of the above, consider creating a **Student Performance Agreement (SPA)**, a structured way to:

- Document behaviors that need to change
- Clarify behavioral expectations
- Outline consequences if change doesn't occur

An effective SPA should target behavior that is specific, observable and changeable. It needs to include a timeline for change and appropriate consequences. [Student Conduct](#) can also help with deciding if/when to use SPAs and how to write them.

Appendix: Common Field Hazards

Common Field Hazards

Wildlife

- [Common snakes](#)
- [Common spiders of California](#) (Essig Museum, UC Berkeley)
- [Pests that injure](#)
- [Poisonous plants](#)
- [Bear safety](#)
- [Mountain Lions in California](#) (CDFW)
- [Rattlesnakes in California](#) (CDFW)

Infectious organisms/diseases

- [Valley fever](#)
- [Giardiasis](#) (California Department of Public Health)
- [Zika Virus Updates](#) (California Department of Public Health)
- [Hantavirus](#) (Centers for Disease Control)
- [Other Vector-borne Diseases](#) (California Department Public Health)
- [Safety Guidelines for Field Researchers](#) (UC Berkeley EH&S Publication – not updated recently – but this document has served as a model for many university field safety programs)

International Planning Resources

- [Infectious Diseases and Travelers' Health - Search by Destination](#) (Centers for Disease Control)
- [Travel Advisories by Location](#) (US Department of State)

Extreme Conditions & Weather

- [Weather Forecasts](#) (NOAA)
- [Cold Stress – Preventing Hypothermia and Frostbite](#) (NIOSH)
- [Backcountry Avalanche Safety](#) (National Ski Patrol)
- [Lightning Safety](#) (eLCOSH)
- [Winter Storm and Other Emergency Preparedness](#) (American Red Cross)
- [Acute High Altitude Illnesses](#) (New England Journal of Medicine, 2013)

Wildlife Biology

- [Guidelines for use of wild animals in research and teaching](#) (American Society of Mammalogists)

- [Science Guidelines](#) (American Fisheries Society)
- [Resources, Collection & Curation Practices](#) (American Society of Ichthyologists & Herpetologists)
- [Precautions for Zoonotic Disease Prevention in Veterinary Personnel](#) (National Association of State Public Health Veterinarians)
- [Fish & wildlife training modules](#) (Canadian Council on Animal Care)
- [Health Risks for Marine Mammal Works \(UC Davis Vet Medicine, 2008\)](#)
- [Disease Precautions for Hunters \(AVMA\)](#)

Leave No Trace & Outdoor Ethics

- [Master Educator Manual](#)
- [North American Booklet](#)

Community Studies, Human Subjects Research

- Working Alone Off-Site (CCOHS Fact Sheet):
http://www.ccohs.ca/oshanswers/hsprograms/workingalone_offsite.html
- Guidelines for Social Worker Safety:
[Guidelines for Social Worker Safety \(NASW\)](#)

Appendix: Campus Support Resources & Policies

[Environmental Health and Safety](https://www.chapman.edu/faculty-staff/environmental/index.aspx): <https://www.chapman.edu/faculty-staff/environmental/index.aspx>

[Risk Management](https://www.chapman.edu/faculty-staff/risk-management/index.aspx): <https://www.chapman.edu/faculty-staff/risk-management/index.aspx>

[Incident/Accident Investigation Report](https://web.chapman.edu/incidentreporting/Login.aspx?ReturnUrl=%2fincidentreporting%2fincidentForm.aspx):

<https://web.chapman.edu/incidentreporting/Login.aspx?ReturnUrl=%2fincidentreporting%2fincidentForm.aspx>

[Student Conduct Policies](https://www.chapman.edu/students/policies-forms/student-conduct/conduct-code.aspx): <https://www.chapman.edu/students/policies-forms/student-conduct/conduct-code.aspx>

[Sexual Harassment Prohibited by Title IX Policy](https://chapman.cascadecms.com/renderfile/6fef14a3c04d744c610b81dac0a8d082/faculty-staff/human-resources/_files/eodo/title9-policy.pdf):

https://chapman.cascadecms.com/renderfile/6fef14a3c04d744c610b81dac0a8d082/faculty-staff/human-resources/_files/eodo/title9-policy.pdf

[Equal Opportunity Office](https://www.chapman.edu/faculty-staff/human-resources/eoo/index.aspx): <https://www.chapman.edu/faculty-staff/human-resources/eoo/index.aspx>

[Drug-Free Schools and Campuses Regulations](https://www.chapman.edu/students/policies-forms/student-conduct/biennial-review-2020.pdf): <https://www.chapman.edu/students/policies-forms/student-conduct/biennial-review-2020.pdf>

Majority of content and resources stated in this manual was taken from the [University of California, Field Operations Safety Manual \(2019\)](#).

APPENDIX: In Memory - A Collection of Recent Fatalities in the Field

Please note, a more extensive list is compiled by Richard Conniff, author and contributor to the NY Times, in his blog [“The Wall of the Dead: A Memorial to Fallen Naturalists.”](#)

Panama, Wildlife Biology (2017) - Parker James Matzinger – 22, of Ashland, Oregon, passed away on Jan. 26, he had just begun a three-month internship with the Smithsonian Institute and was setting up new animal camera traps in the jungle. [Related article](#)

Ethiopia, Plant Biology (2016) - Sharon Gray – Post-doc at UC Davis, killed when a rock went through her car window and hit her head, on the outskirts of the capital city, Addis Ababa, Ethiopia. [Related article](#)

Antarctica, Climate Research (2016) - Gordon Hamilton – Professor at UMaine conducting climate systems research, died in a snowmobile crash into a crevasse in Antarctica. [Related article](#)

Congo, Wildlife Biology (2016) - Jana Robeyst – Wildlife Conservation Society field researcher, charged by a wild elephant – [Related article](#)

USA (Santee National Wildlife Refuge) (2016) – Wayne Grooms – rattlesnake bite to his lower left leg. [Article](#)

Zambia, Wildlife Biology (2015) – Margarita Metallinou – Researcher from Villanova University specializing in reptiles was working in Kafue National Park, when an elephant trampled her to death, age 29. [Related article](#)

Ethiopia, Wildlife Biology (2015) - Bill Stanley - head of the mammal collection at the Field Museum in Chicago, died of a heart attack, age 58, while running traplines for rare species in Ethiopia. [Related article](#)