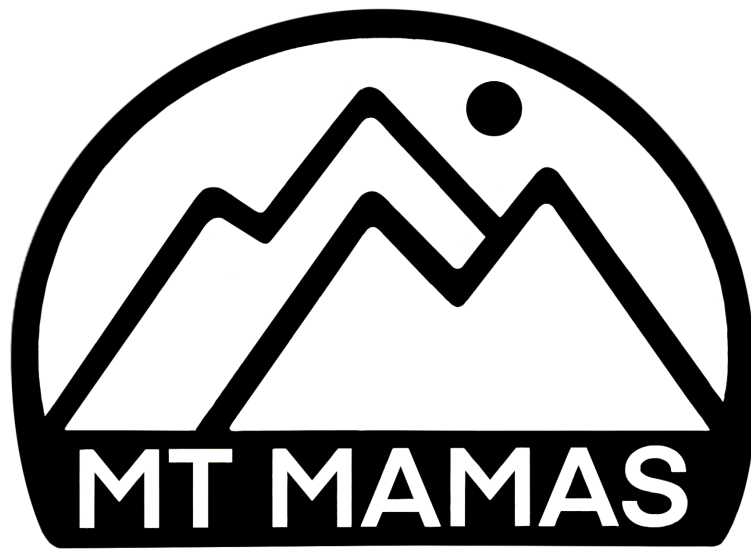




E-Biking Manual

E-Biking

TRIP LEADER REQUIREMENTS

- **Assistant Trip Leader** – Knows parts of a bike; Carries spare parts and extra gear; Knows basic maintenance and adjustment for E-Bikes; Knows bike laws/safety/etiquette; E-biked 10 miles in the last 2 years; First Aid/CPR certified
 - Provides instruction for safety on gear, hydration, road dangers
 - Monitors participants for signs and symptoms of signs and symptoms of hypo/hyperthermia, dehydration
 - Assists in fitting and checking gear and participants for safety
 - Carries Bike first aid kit if Lead Trip Leader designates, and administers basic first aid if needed - can be designated Medic Guide
 - Carries 2-way radio for communication (if no phone reception)
 - Wears Trip Leader handkerchief to identify as a Trip Leader
 - Wears whistle to communicate in emergencies
- **Lead Trip Leader** – Demonstrates basic navigational skills; Demonstrates advanced riding skills; Biked 20 miles in the last year; 20 hours experience leading activity; Wilderness First Responder Certified
 - Recons area for activity within 1-2 months of activity
 - Completes Trip Report prior to and after activity
 - Determines routes including emergency routes
 - Aware of signs and symptoms of hypo/hyperthermia, dehydration and teaches participants as needed
 - Checks weather
 - Checks gear for safety prior to activity
 - Checks participants for safety and leads safety discussion
 - Carries Bike first aid kit if not designated to Assistant Trip Leader
 - Carries 2-way radio for communication (if no phone reception)
 - Wears Trip Leader handkerchief to identify as a Trip Leader
 - Wears whistle to communicate in emergencies
 - Communicates with Base Commander at the beginning, middle and end of activity via phone or In Reach Beacon
 - Completes Incident Report and/or SOAP Note if any concerning situation occurs on activity
 - Reports any damaged gear or safety concerns from trip

E-Biking - Activity Plan

PRIOR TO ACTIVITY

GEAR

- **Provided by Mt Mamas:**
 - Bike First Aid Kit - has bike basic bike repair equipment in addition
 - Whistle per Guide
 - 2-way radios (if needed)
 - Emergency Beacon (if needed)
 - Bike gloves for Participants (4 pairs to borrow)
- **Provided by Participants:**
 - Road or Mt E-Bike
 - Helmet
 - Running/Biking shoes
 - Biking or regular shorts (not cotton)
 - Thin synthetic pants (cold weather)
 - Short sleeve shirt (no cotton unless in the desert)
 - Long sleeve shirt (not cotton)
 - Fleece or down insulating layer (cold weather)
 - Waterproof jacket
 - Biking gloves
 - Day pack (optional for longer rides)
 - 2 water bottles on bike or 2L in water bladder in pack
 - 1 snack per hour on activity
 - Sunglasses
 - Sunscreen
 - Camera
 - Personal first aid kit
 - Bike repair kit (pump, bike levers, patch kit, multitool - see Appendix A)
- **Have participants watch:**
 - ["Learn How to Ride an E-Bike \(in 5 minutes\)"](#) eBicycles (video 5 min)

POSSIBLE ACTIVITY LOCATIONS - ROAD

- Mapleton Trail (Intro Clinic/Beginner)
- Murdock Trail (Intro Clinic/Beginner)
- Hobble Creek Cyn (Beginner/Intermediate)
- Cache Valley, Logan (Intermediate)
- Morgan Valley, Morgan (Intermediate)

- Alpine Loop, AF Cyn (Extreme)

POSSIBLE ACTIVITY LOCATIONS - MOUNTAIN

- Little Valley, Corner Canyon (Intro Clinic) - Class 1 only
- Valley Vista, PG (Intermediate)
- Moab - only on motorized trails NOT Mt Bike trails
- Rush Trail, Corner Canyon (Intermediate) - Class 1 only
- Park City - Class 1-2 on wide (5 ft) or paved trails only

INDIVIDUAL DEFINITIONS

- **Participant** – Individual participating in activity
 - o Notify Mt Mamas of any health concerns or injuries prior to activity
 - o Report if activity appears too strenuous or difficult
- **Assistant Trip Leader** – Assists Lead Trip Leader with activity
- **Lead Trip Leader** – Leads activity with Assistant Trip Leader (if needed due to group size)
- **Sweeper Trip Leader** - Last Trip Leader in the group (usually the Assistant Trip Leader)
 - o Makes sure all participants make it through activity safely
 - o Carries 2-way radio for communication with Lead Trip Leader (if no phone reception)
- **Medic Trip Leader** – Trip Leader designated per activity with first aid/CPR certification
 - o Main Trip Leader in charge of minor accidents or injuries
 - o Designated Trip Leader to stay with injured individual if case of evacuation
 - o Last in group and will assist any in the back of the group with any concerns
 - o Carries 2-way radio for communication (if no phone reception)
- **Base Commander** – Individual not participating in activity that Trip Leader Guide is to report to prior to before, during and after activity of safe completion of activity.
 - o Will notify emergency contacts and/or Search and Rescue if group is late or lost

BEGINNING ACTIVITY

SAFE GEAR (GEAR CHECK)

- Check Mt Mama gear for safety: bike first aid kit, 2-way radios (if needed), emergency Beacon (if needed)
- Check Participants gear for safety - helmets, E-bikes, gloves
 - Gear
 - Helmets - Straps, buckles, and tightening mechanism work
 - Gloves - padded
 - E-Bikes - check that brakes and shifting are working. Have Participants ride around the parking lot and check that both are working. Check they are fully charged.
 - Types of E-Bikes - Commuter, Performance (Mt Bike, Road), Utility (see Appendix B)
 - Trip Leaders are NOT required or responsible to size or fix broken gear - participants should ensure gear is safe and sized correctly prior to activity
 - Trip Leaders can refuse participation of any Participant if gear is determined to be unsafe.
- Trip Leaders can demonstrate how to adjust gear
 - Helmets -
 - Ensure it sits level on your head, low on your forehead with only two fingers of space between your eyebrows and the helmet
 - Adjust the side straps to form a "V" shape just below your ears, and tighten the chin strap so only one finger can fit between your chin and the strap
 - Make sure the helmet doesn't rock on your head when you move your head around
 - Adjust the fit system at the back of the helmet to achieve the correct position
 - Bike Seat - make sure it's at optimum height
 - Loosen the clamp on the seatpost
 - Adjust the saddle to the calculated height - While sitting on the bike with your heel on the pedal, your leg should have a slight bend at the bottom of the pedal stroke
 - Tighten the clamp

SAFE PARTICIPANTS

- Trip Leader to Participant Ratio 1:6
- Check Participants for safety: appropriate clothing, appropriate health, appropriate gear

NOTE: sizing should be determined by individual or rental shop - Trip Leaders are NOT required or responsible to size or fix gear

SAFETY TALK

- **Circle Up** - when participants arrive, gather them together in a circle and have them share 3 things:
 - Name
 - Experience in the activity
 - Goal for the activity
- **Safety talk:** describe the activity and safety items for participants to be aware of (5 items):
 - Environment – weather, trail conditions, distance, routes and technical concerns, time expected, bathrooms/cell phone service
 - Gear –
 - Helmets - See sizing above. MANDATORY for participating in activity
 - E-Bikes -
 - Review parts of the bike (see Appendix C)
 - Have Participants ride around parking lot/trailhead area to check brakes and shifting is working appropriately if not already done
 - ABC Bike Check - Air, Brakes, Chain (see Appendix D)
 - Pedals - clips/baskets - Practice clipping in and out on a flat lawn first (see Appendix E)
 - Check Charge
 - People – sunscreen/hat/sunglasses, food/water, appropriate clothing
 - Clothing -
 - Biking shorts or regular shorts
 - Pants - tuck in rt leg if loose pant leg
 - Shoes - biking shoes, running shoes
 - Gloves - padded and full fingered if Mountain Biking
 - Dangers – describe any dangers that could occur:
 - E-Mountain Biking
 - Trail Safety -

- Weather changes - if trail is muddy DO NOT ride as it will damage the single track
 - Route - clarify any confusing turns or stops; one way trails
 - Hazards along the route - cliffs, tight switchbacks, loose rock, etc
- E-Road Biking
 - Weather changes - road will become slippery, especially on painted lines
 - Route - clarify any confusing turns or stops
 - Hazards along the trail/road - railroad crossings, no shoulder areas, loose rocks, steep hills up or down, difficult road crossings
 - Traffic
 - Ride with flow of traffic
 - Keep to the shoulder as able
 - Use hand signals to communicate intentions (see Appendix F)
 - Be visible - wear bright clothing and/or use lights on front and back
 - Obey road rules - stop at all stop lights/stop signs, yield to pedestrians
 - Point out obstacles to those behind you
 - Maintain safe speed so you can stop quickly
 - Use bike lanes when possible
 - Throttle - watch sudden jerks of throttle when on rocky trails
- Broken bikes
 - Popped tire - notify Trip Leader for assistance (see Appendix G)
 - Other bike repairs (see Appendix H)
- Safety – what you will be doing to mitigate those dangers
 - ABC bike check before ride
 - Bike problems - Pull off road/trail to safe area for repairs
 - If you are in a crash - get off road/trail if possible, have someone stop or warn other riders/vehicles, perform first aid

E-BIKING LESSON (PROGRESSION) - Trip Leaders can use their own discretion to determine which drills and skills would best meet the goals of the Participants. A progression is a series of steps that logically build on one another, increase in difficulty, and are focused specifically on participants. There are always several ways to teach a lesson. Every Participant needs different things, some will need to spend time on a skill and others can skip ones.

- Teaching Tips
 - Trip Leader Body Language
 - Posture - relaxed, stand and face them
 - Hand Gestures - waving, thumbs up, hand shakes or high fives
 - Facial Expressions and Eye Contact - make eye contact, smile
 - Teaching Theory
 - Understand the Teaching/Learning Cycle (see Appendix I)
 - Understand Different Learning Styles (see Appendix J)
- Choose which skills would be appropriate for your group in the selections below

IN THE PARKING LOT (choose which skills would be appropriate for your group)

- **Balance**
 - Get bike into a low gear
 - Put favorite foot on pedal just above horizontal
 - Push off with other foot and start moving and pedaling
- **Range of Motion**
 - On flat trail, set seat low
 - Back - Practice sitting back off the seat and pushing forward on pedals
 - Neutral - Stand up on pedals
 - Forward - Point toes down and bring shoulders forward over front wheel
 - Repeat
- **Using your arms and legs as suspension**
 - Start in a standing position so you can bend your legs and arms to absorb impacts
 - Let the bike come up to you with rises and push arms down with the declines
- **Gear Shifting**
 - Front cassette - large cog is for speed, smallest to go slow
 - Rear cassette - large cog to go slow, smallest for speed

- Avoid “cross loading” where the chain is on one side of the cog in the front and the opposite on the rear which can cause too much tension
- Only shift 1-2 gears at a time
- Look ahead to plan when to change gears early
- Try and keep the same pedaling speed (cadence) no matter the slope
- Ease off the power right before changing gears will help for smoother changes
- **Practice clipping in and out of Pedals**
- **Using the Throttle/Pedal Assist**
 - Throttle only - no pedaling, uses battery fast
 - Pedal-Assist - pedal with different levels of assistance from e-bike, uses battery less, extend range, use when going up hills
 - Full Pedal - bikes are heavy, harder than regular bike, uses no battery
 - Tips:
 - Safety - Yield to pedestrians (get off trail if able); keep speeds low when on trails/sidewalks
 - Conserve battery - intermittently use the throttle, coast, pedal to get going

ON THE ROAD (choose which skills would be appropriate for your group)

Ascending Tips

- **Climbing**
 - Use Pedal-Assist to conserve battery
 - Seated with elbows bent slightly, slide forward slightly in saddle and drop weight slightly to the bars
 - Stand up and pedal on short, steep climbs if using pedal-assist
 - Watch speeds if riding with other bikers without throttle
- **Looking Ahead**
 - Pick your line ahead
 - Look for good grip
 - Watch out for loose gravel/dirt
- **Tight Turns**
 - Look where you want to go and the wheel will follow

Descending Tips

- **Braking**
 - Release throttle

- Disc brakes generally only need one finger to brake - may need to adjust brake to proper position (have in line with arm at around 45 degree angle riding position)
- Pull both brakes slowly and smoothly until stopped
- Front brake - has more stopping power than rear brake
 - Using it only will cause flips, but using it more as terrain gets more steeper will help you do steeper trails
- If one of the brakes locks and skids, gently release brake
- **Descending**
 - Standing gives space to use arms and legs as suspension
- **Descending turns**
 - Keep chest low, arms slightly bent to keep center of gravity low
 - Keep head up to see where you are going
 - Flat turns - Drop outside foot on outside of turn to drop center of gravity and allow for better traction
 - Brake mostly BEFORE the turn
 - Let the front wheel swing wide to make turn easier
 - Coasting - keep feet level
 - Turn early on outside, then cut inside
- **Tight Turns**
 - Look in the direction you want to go
 - Move arms - straighten arm on inside of turn
 - Brake first, wide as possible, look at exit

Reference: [“10 Essential Mt Biking Skills for Beginners”](#) Global Mountain Bike Network video (11 min); [“Tips for Beginner Mt Bikers”](#) Skills with Phil video (8 min)

WRAP UP AND CLOSING

- **Review**
 - Review Lesson - how the days went, clarify any questions
 - Have participants review their trip
 - Focus on positives
 - Review skills - ask questions on new skills acquired
 - Review Goals and Progress - successes and struggles
 - Make a plan for practice at home - discuss skills to work on or upcoming trainings
- **Preview** - what they could learn next
 - Build on new learning

- Invite them back - look up upcoming trips online

(based on the Professional Ski Instructors Association/American Association of Snowboard Instructors (PSIA/AASI) certification courses "Delivering the Beginner Experience -Alpine" and "Alpine - Level 1")

Risk Management Plan

E-Biking has large inherent risks. Without good Risk Management it is impossible to create the “safe and joy-filled environment” that Mt Mamas seeks to offer every Participant. Managing risk involves using good judgment to make sound decisions in a dynamic environment. This section contains a general overview of common risk factors on E-Biking trips as well as an outline of expected practices for activities. Additionally, you will find the Emergency Action Plan detailed step by step on what to do if you are faced with some common injuries while during the activity and also for emergency situations.

Objective Risk Factors exist inherently in the activity itself

Subjective Risk Factors exist as a result of human engagement in the activity

RISK MANAGEMENT PRACTICES

- **Ratios:** Trip Leaders should maintain a **1:6 Lead Trip Leader to Participant ratio** for each e-biking group and groups can be increased with additional Assistant Trip Leaders to maintain the Trip Leader to Participant ratio.
- **Training:** Mt Mamas requires all Lead and Assistant Trip Leaders to be able to demonstrate proper technique and skills listed at the beginning of this manual.
- **Gear Safety:** Helmets and Road Bikes will be brought by participants and Trip Leaders will assess generally for safety.
- **Gear Inspection:** Trip Leaders will assess gear for safety prior to trip. Trip Leaders are NOT required or responsible to size or fix broken gear - Participants should ensure gear is safe and sized correctly prior to activity. Trip Leaders can refuse participation of any Participant if gear is determined to be unsafe.
- **Planning & Preparation:** Good risk management begins with good planning and preparation. Trip Leaders will select an appropriate activity site and route that takes into account (among other things) expected weather, terrain, timing, other users, group size, background, experience, physical condition, and goals for the day. Trip reports, waivers, and checklists will all be utilized online prior to the activity to ensure the group is prepared before each trip.
- **Participant Fitness Level:** Must be able to participate in athletic activity without difficulty. Individuals are responsible to notify Trip Leader PRIOR to the trip if they are not feeling their fitness level is adequate.

Emergency Action Plan

E-Biking

PREVENTION

- Trip Leader
 - Trained in First Aid/CPR (Assistant Trip Leaders) and Wilderness First Responder/CPR (Lead Trip Leaders)
 - Completes Trip Report prior to activity (office will update medical and emergency contact information on Participants)
 - Carry Biking First Aid Kit at all times during activity
 - Use walkie talkies (one for each Trip Leader in no phone reception)
 - Carry In Reach Beacon (if needed)
 - Check for safe gear, safe participants and have safety chat prior to activity
 - Notify Base Commander of group status and the beginning, middle, and end of activity by phone or beacon
- Base Commander
 - Receive notifications from Trip Leader at the beginning, middle and end of activity
 - Be available during activity to notify emergency contacts of tardiness of group or assist in emergency evacuation or contacting emergency services if needed
- Office
 - Update Trip Report with medical and emergency contact information on participants
 - Email Trip Leader and Base Commander the Trip Report and Emergency Contact and Medical Information prior to activity

LOST OR LATE RETURNING GROUPS

- Prior to activity
 - The Trip Leader will fill out a preliminary **Trip Report** complete with proposed location of activity, possible evacuation routes, and expected times for leaving and returning.
 - Every trip will have a **designated "Late Time"** the the Base Commander will notify emergency contacts of delay.
 - Every trip will have a **designated "Emergency Time"** when the Base Commander will notify Search and Rescue if the Base Commander has not been notified of the safe exit of all participants from activity.

- The Trip Leader can **notify the Base Commander during an activity if the predicted times need to be adjusted.**

INJURIES

- **Minor Injuries:** (minor scrape, sprain, etc.)
 - The designated Medic Trip Leader (generally the rear Assistant Guide or Trip Leader with most medical experience) will administer first aid while the other Trip Leader manages the rest of the group. The affected participant should be kept calm and comfortable. A Trip Leader, or volunteer with medical experience, should remain with the injured participant until they are able to return to the rest of the group. An **Incident Report** should be completed on site if possible or after and signed by both patient and Trip Leader. Take clear **photos** of any wounds or injuries when it is convenient.
- **Major Injuries:**
 - The designated Medic Trip Leader will stay with the participant and assist while the Lead or Assistant Trip Leader manages the rest of the group. The Lead Trip Leader or designated Assistant Trip Leader will make phone calls to the appropriate emergency number below. **An Incident and SOAP Note** should be completed at the time of the event if possible. Take clear **photos** of any wounds or injuries when it is convenient.

COMMUNICATION

- In a Life/Limb Emergency or Property-threatening emergency
 - Try the National Park/State Park/Forest Service/BLM-specific emergency numbers
 - If no park-specific numbers exist, call 911
 - If 911 does not work, use emergency beacon to notify Search and Rescue
- In ALL Emergency Situations, after care has been secured, **notify Base Commander**. If Base Commander is not available, call Emergency Backup Personell (Emily Hacken 801-860-4591) or Marilyn Boucher (801-803-1398). Call each number three times in succession, if no one answers the three phone calls, wait 15 minutes, and move on to the next person.

EVACUATIONS

- If a participant is injured and requires evacuation, follow these procedures based on the situation:
 - The participant can walk - Trip Leaders will assist the participant in walking/biking/hiking out.

- o The participant can't walk – Trip leaders will assess if the participants will need to be carried out (if this can be done safely).
 - o The participant can't be carried – if due to a possible head/neck injury or other injury, then notify 911 and/or search and rescue.
- Trip Leaders will assess all locations in an activity to determine easy access to vehicles and alternate escape routes prior to activity. Trip Leaders will document this in the Trip Report and discuss this with Participants at the beginning of activity.

APPENDICES

APPENDIX A

Bike Repair Kit

- **Short Rides**

- Spare Tube
- Patch Kit - For flat tires
- Tire Levers (3) - Tire levers help you pry your tire off the rim of your wheel when you're fixing a flat. They're especially helpful when you're removing a road tire, as opposed to a mountain bike tire, because road tires typically fit very tightly on the rim.
- Bike Pump or CO₂ inflator and cartridge - If you get a flat tire while you're out on the road, you'll need a way to inflate the tire after patching or replacing your tube. Always carry a small hand pump or CO₂ inflator that will fit in your backpack or mount to your bike frame.
- Multi-tool
- Variety of Allen wrenches
- Adjustable wrench, or open or hex wrenches (8, 10, 15mm are the most common, but size requirements vary depending on the bike)
- Chain tool with master link
- Phillips screwdriver
- Flathead screwdriver
- Money
- ID
- Insurance card
- Cell phone
- Spare light
- Battery key

- **Bike Repair Kit Tools for Longer Rides**

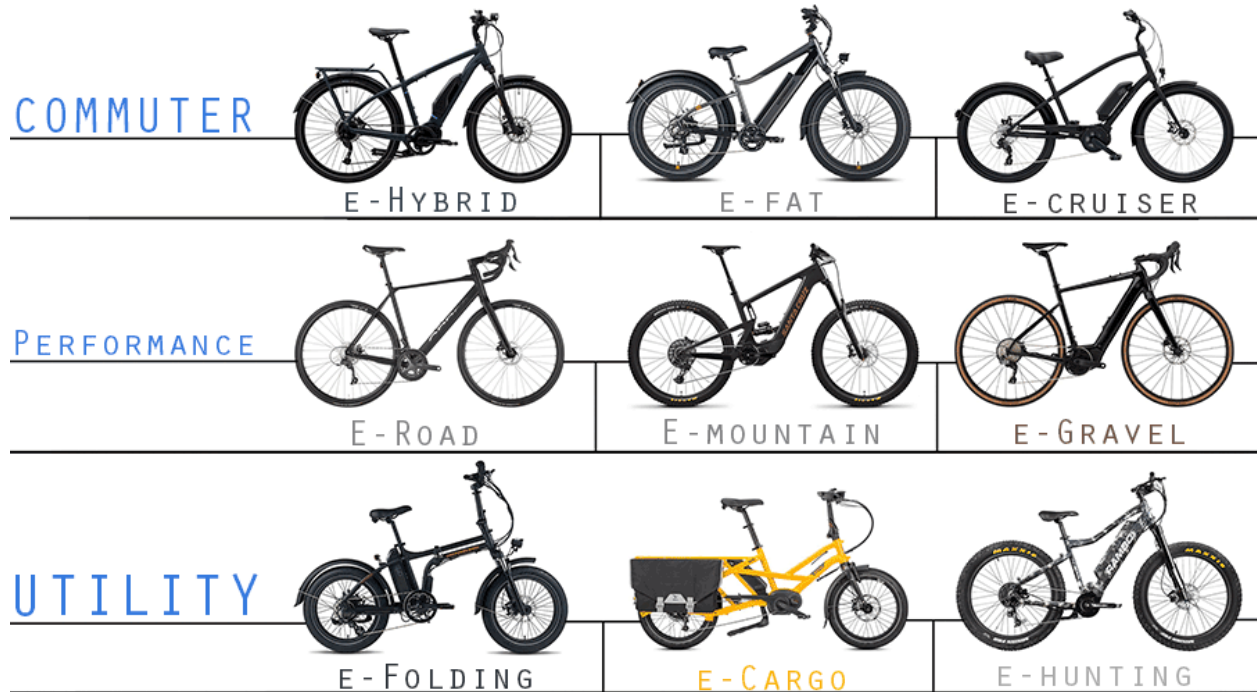
- Allen wrenches (sizes that match the components of the bike being ridden)
- Open-end wrenches (or an adjustable wrench)
- Chain tool
- Phillips and standard screwdrivers
- Pliers (preferably needle-nose)
- Spoke wrench
- Duct tape
- Zip ties

- Lubrication Supplies - On multiday rides and rides that include lots of dirt roads or trails, you may want to clean and relubricate certain bike components from time to time to maintain good performance. Bring along a small container of chain lubricant and a few clean rags to keep your bike running smoothly.
- **Multi-Day/Long-Distance Touring** - Most road, mountain and town cyclists don't need spare parts. However, the touring cyclist should consider the following (but only carry these items if you know how to replace them):
 - Spare battery - cables for charging
 - Spare tire - Tires don't need to be replaced often. But on tours in remote areas, carrying a spare may be easier than finding a suitable replacement. Be sure to buy folding tires, which are far easier to store and carry on tours than non-folding ones.
 - Spare brake cable/shifter cable - These do not break frequently. But when they do, they must be replaced immediately. Cut the cables to length before you leave home to avoid problems out on the road.
 - Spare nuts and bolts - Normal cycling can shake even the tightest nuts and bolts loose over time. If you're new to touring, check with your local bike repair shop before your trip to find out which nuts and bolts to carry.
 - Replacement chain links - If your chain breaks while you're riding, you'll want to have a replacement chain link. They're small and light, so throw one in.
 - Spare spokes - These may be helpful, as long as you know how to replace them correctly. Spares should be sized at a bike shop, then taped to your frame or a rack until needed.
- **How to Carry Repair Kit Essentials** - For shorter recreational rides, a small saddle pack that fits a spare tube, patch kit and a multi-tool is probably sufficient. On longer rides and commutes, handlebar packs, rack trunks, frame bags, panniers and backpacks that hold your repair kit essentials and leave room for food, clothes and more will come in handy.
 - Saddle packs
 - Handlebar packs
 - Rack trunks
 - Frame bags
 - Panniers
 - Backpacks

Reference: ["What to bring in a bike repair kit"](#) REI

APPENDIX B

Types of E-Bikes



Reference: "[Types of electric bikes explained for beginners](#)" Bike Exchange

APPENDIX C

E-Bike Parts



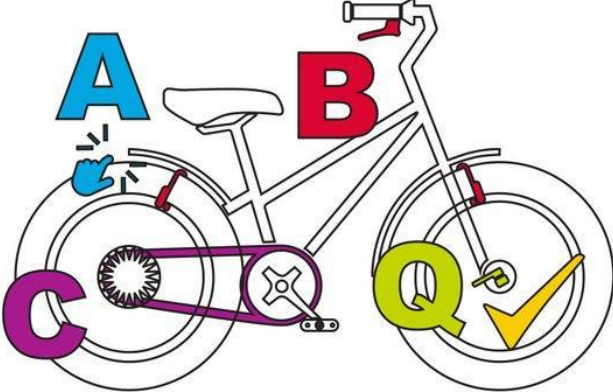
Reference: ["E-Bike Parts"](#) Okfeet

APPENDIX D

ABC Bike Check

Check Your Bike for Safety

Check it yourself with the
ABC Quick Check:



AIR – Pinch the tires.
They should be hard.

BRAKES –
Make sure they work and
aren't rubbing the tire.

CRANK/CHAIN –
If there are problems with
your gears or if the chain
is loose, take your bike to
a bike shop.

QUICK CHECK –
Check "quick release levers"
and other bolts to make
sure they are tight.

Be A Safe Bike Driver

mainedot.gov/bikeped



Reference: [Be A Safe Bike Driver](#), Maine DOT

APPENDIX E

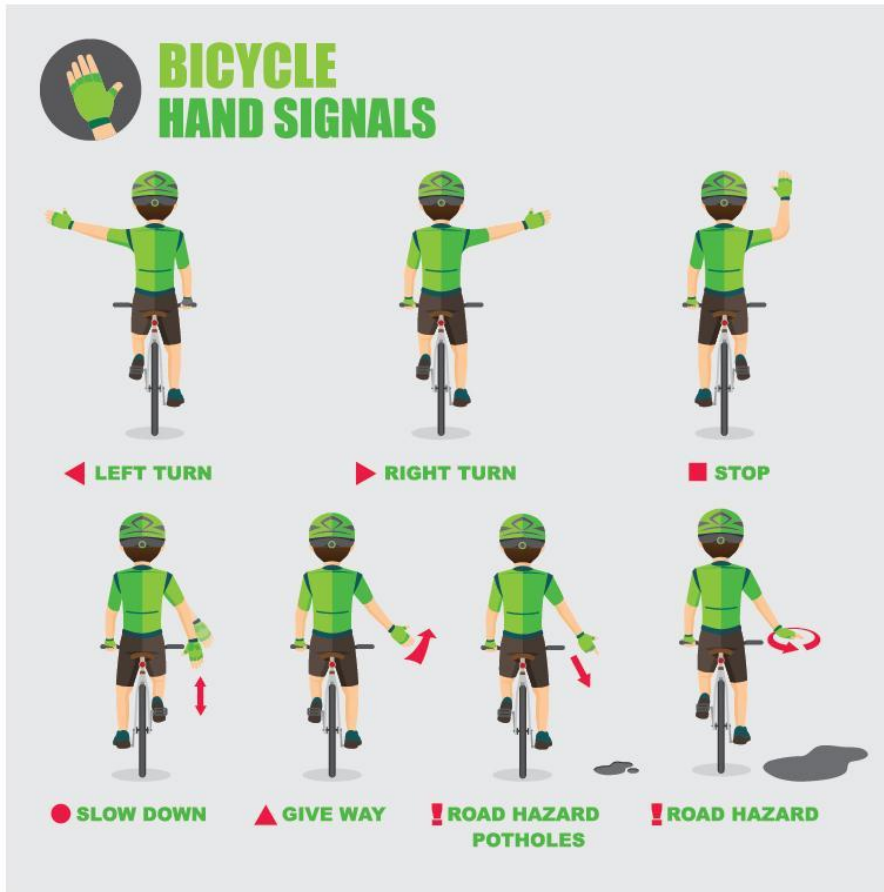
How to Clip into Pedals

- In a stationary position or leaning against a wall
 - Clip In
 - Aim to position your foot near the 2 o'clock position on the pedal
 - Slightly lift your toe to engage the cleat
 - Push down firmly
 - Clip out
 - Rotate your heel outward while your foot is at the bottom of the pedal stroke
 - Gradually increase the tension on your pedals as you get more comfortable.

Reference: Global Biking Network

APPENDIX F

Hand signals



Reference: "[Bike Hand Signals](#)" Bicycle NSW

APPENDIX G

Fixing Flats

Rear Wheel (rear hub drive system)

- Remove the wheel
 - Disconnect cable from frame - clip zip tie/bracket with screw or connection to frame
 - Disconnect electrical plug (if it doesn't disconnect, remove wheel and set on frame)

- Flip bike upside down - make sure to remove or adjust any screens on the handlebars; soft area/grassy ground, or two boxes under handlebars
- Remove derailleur
- Loosen axle nuts - completely remove derailleur side off
- Pull derailleur back and lift wheel out
- Flat repair
- Install the wheel
 - With disc brakes, make sure you line up the disc rotor into the calipers
 - Make sure washers are next to wheel
 - Pull chain up around cassette
 - Set wheel into notch of frame
 - Tighten bolts
 - Plug in cable - line up arrows
 - Reinstall the clip/ziptie

Reference: [“Fixing an E-Bike Rear Wheel Flat Tire”](#) Bumstead’s Bicycles (video 11 min)

Front Wheel - [“How to fix a flat tire - Coop Class”](#) REI video (21 min)

- Release your brakes
 - Rim Brakes - First, if you have rim brakes, you'll need to release your brakes.
 - If you have a v-brake, squeeze the brake arms together to ease the tension so you can release the cable.
 - If you have a quick-release lever on the brake, open the lever.
- Release the wheel from the frame
 - If you have a quick-release axle, open and hold the lever while you unscrew the nut on the opposite side.
 - To loosen a bolt-on axle, use a wrench to loosen the bolt.
 - Tip: It helps to use a bike stand or to flip the bike upside down. Remember to remove your panniers and other bags beforehand.
 - To [remove the rear wheel](#), follow these steps:
 - Shift your chain onto the smallest cog of the rear cassette.
 - If you have rim brakes, open up the brakes so the tire doesn't get stuck when you remove the wheel. (If you have disc brakes, you won't need to release brakes.)
 - Many wheels have a quick-release axle system. Pull open the lever and spin to loosen; you may need to unscrew the nut on the opposite side.
 - Push the rear derailleur back so that the chain lifts away from the cog.

- With your other hand, remove the wheel from the dropouts on the bike frame.
 - Tips:
 - If your bike has disc brakes, be careful not to touch the rotor when opening the quick-release mechanism because it can be hot enough to burn you. Also, avoid getting oil or other contaminants on your disc brakes.
 - Practice taking the wheel on and off as often as possible. The more you do it, the easier it will be when you actually have to do it by the side of the road.
- Remove the tube
 - Deflate your bike tire completely. You'll do it one of two ways, depending on the valve.
 - Schrader valve (wider - the type you see on most car tires) - press down on the small pin in the center of the tire valve.
 - Presta valve (thin and skinny) - remove the plastic dust cap, turn the small valve at the top counterclockwise and press down to release air.
 - Next, unseat the tire bead (the edge of the tire that fits under the rim) using these steps:
 - Pushing the bead edge in toward the center of the rim and working your way around the rim. Then move the bead of the tire up and over the outside edge of the rim.
 - With tire levers, use them for additional leverage.
 - Start on the section of your tire opposite the valve (to avoid damaging the valve stem).
 - Use the longer end of one tire lever to pry the bead of the tire up and over the edge of the rim.
 - If you can't unseat the tire with just one lever, place a second lever about two or three spokes to either side of the first. (Tire levers come with a handy notch that can be secured against a spoke, keeping the lever in place.)
 - Once a section of the tire bead is free, you should be able to free the rest of the tire bead with your fingers.
 - Remove the inflatable tube from beneath the tire by pulling the valve stem out through the rim first.
 - The rest of the tube should slide out easily when pulled.
 - Be careful when pulling the valve out through the rim so you don't damage the valve on the sharp edge of the rim.
- Find the Cause of the Flat
 - Carefully inspect the tire and tube for punctures, cuts or tears.

- The tire: Start on the outside of the tire and work your way in. Look for any embedded objects in the outside tread. Thoroughly check the tire with your thumb and index finger, feeling the inside of it. If you find something, check the tube at the same approximate location to see if there's damage there.
- The tube: Tube damage can be difficult to spot. If you don't see any obvious punctures or blowouts, inflate the tube to check for escaping air. To find very small leaks, bring the tube close to your face to feel for air or listen for a hiss, or submerge it in water and look for bubbles.
- The valve: If the valve stem or base is cut, cracked or severely worn, it may be leaking. If so, the entire tube will need to be replaced.
- The rim: Look for protruding spoke ends inside the rim, or areas where the tube may have pinched against a spoke-hole opening.
- Tips:
 - Don't remove the tire all the way from the wheel. Once you identify damage somewhere, you can check the same location across the tire, rim and/or tube to see if you can identify the cause of the problem.
 - Add a pair of tweezers to your bike repair kit to remove small items from your tire or tube.
- Should You Replace or Repair A Damaged Tube?
 - Replace Your Tube
 - To save time while out biking, many cyclists may prefer to replace a damaged tube with a new one and repair the old one later.
 - Any time the damage is too extensive or severe to patch, when a patch job fails to hold or when the tube's valve is damaged.
 - Repair a Damaged Tube
 - Tip - Can just tie a knot in tubing over the hole if no repair gear available
 - Find the damaged area.
 - Clean and dry the damaged area.
 - Rough up the surface of the damaged area with sandpaper (to help the glue adhere).
 - Spread the glue (vulcanizing fluid) and allow it to set until tacky.
 - Apply the tube patch and hold it in place with pressure.
 - Repair hack: To temporarily fix a tear in the tire sidewall, use a folded-up dollar bill (or an empty energy gel wrapper). Place it in

between the tire and the tube so it covers the gash and prevents the tube from bulging through. You can also use shoe glue.

- Put a Bike Tube Into a Wheel
 - Partially inflate your new or repaired tube to give it shape and ensure it holds air.
 - If you completely removed your tire from the rim while fixing your flat, push one edge (or "bead") of the tire inside the rim.
 - Insert the valve stem into the valve hole on the rim. Check that the valve stem is straight and not at an angle.
 - Place the rest of the tube inside the tire.
 - Beginning at a point opposite the valve, push the other tire bead inside the rim.
 - Proceed around the wheel (in both directions at the same time), working more of the tire bead inside the rim. This will get harder as you go.
 - Pinch both sides of the tire in toward the center of the rim to make things easier, or carefully use a tire lever to complete the job. Use caution when using a tire lever to avoid pinching the tube.
 - Check along its edges to make sure that the tube is not caught between the rim and the tire bead. This could cause another flat.
- Inflate your tire
 - Inflate slowly, checking both sides of the rim to make sure that the tire bead stays firmly seated.
 - Double-check the valve as you go to ensure it remains straight. To make sure your tube doesn't get caught between your tire and the rim, go around the whole tire once and pinch both sides of the tire inward.
 - Inflate the tire to its recommended pressure (printed on the tire itself or in your owner's manual). If you don't have a gauge, use your thumb as a guide. If your thumb presses in easily, keep pumping.
- Reinstall the wheel

Reference: ["How to fix a flat bike tire"](#) REI, ["How to fix a flat tire - Coop Class"](#) REI video (21 min)

APPENDIX H

Basic Bike Repairs

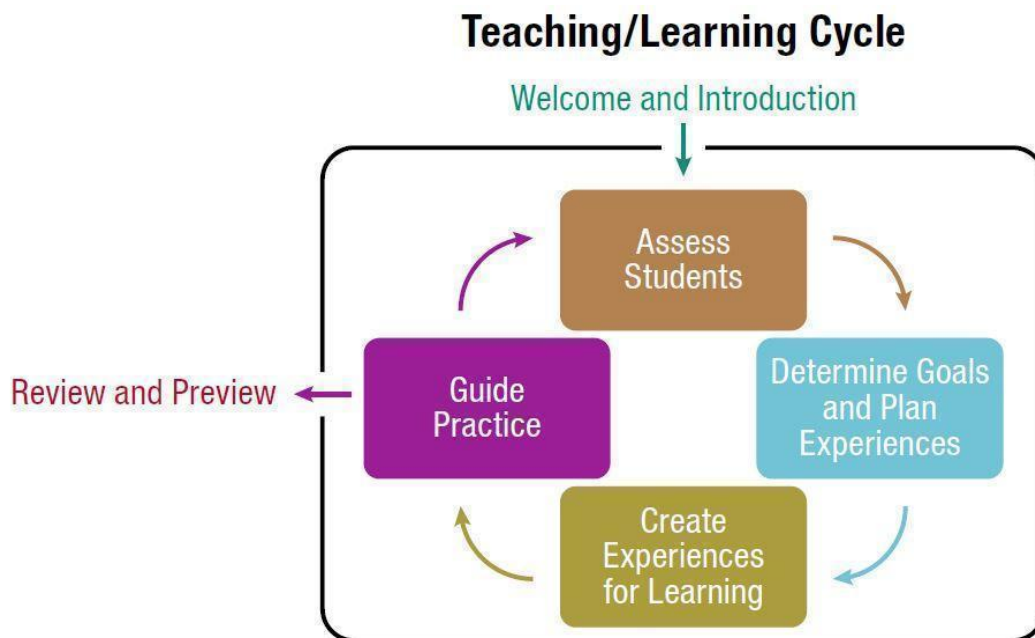
- Flat Tire (see Appendix F)
- Dropped Chain
 - Find biggest leaf to put chain on so you don't get hands dirty
 - Shifted into the smallest ring
 - Feel underneath for chain from the front cassette
 - Pull it up and through
 - Place it back on the cassette
 - Turn pedals to check it is on
- Broken Spoke
 - Take out wheel
 - Find spoke and bend it around the next spoke or zip tie it to it to keep it out of the way
 - Put wheel back and make sure spoke isn't hitting anything
 - You can tighten other spokes if wheel is slightly buckling
 - Be gentle on the ride back
 - Get repaired
- Slipped Down Handlebars
 - Stand over bike
 - Loosen bolts
 - Bring handlebars in right position
 - Tighten bolts
 - Test with slight pressure
- Rubbing Clamp Brakes
 - Adjust calipers
- Rubbing Disc Brakes -
 - Check that wheel is in correctly - remove and adjust if needed
 - Undo the bolts that attach calipers to fork
 - Pull front brake tight
 - Tighten it back up
 - If this doesn't work, look down if there is a gap on the pads and adjust
- Broken Gear Cable
 - Undo pinch bolt on derailleur cable
 - Remove the cable from the bike
 - Get domed end of cable and place it through the barrel adjuster
 - Secure in place using pinch bolt
 - Manually push derailleur into place

- Fine tune derailleur with the barrel adjuster
- Wrap up extra cable so it's away from the spokes
- Broken Brake Cable (front only)
 - Take rear brake cable and install in the front (can't do the reverse because the cable isn't long enough)
 - Remove cable
 - Don't get ends to fray - have to carefully feed back through
- Switching Brake Pads
 - Remove screw and brake and switch
 - Clip in and tighten

References: ["Roadside Repairs - Common Bike Problems You Can Fix"](#) Global Biking Network (video 10 min); ["Quick Roadside Bike Fixes"](#) Global Biking Network Tech (video 10 min)

APPENDIX I

Teaching/Learning Cycle



- **Assess the Student**
 - Before you can build a lesson plan for the day, you need to assess your student's physical abilities and technical understanding. Warm-up activities will give you an opportunity to see how comfortable your guests are on snow, while building good group rapport. Observe their movements, stance, balance, and agility.
- **Determine Goals and Plan Experiences**
 - Ask questions about their goals and motivations for taking a lesson.
 - As the lesson progresses, remember to make sure the group goals align with what each student wants to learn and their motivations for taking a lesson.
- **Create Experiences for Learning**
 - Organize students and the lesson environment by choosing appropriate terrain based on ability and snow conditions. Interact with support, and encourage your students.
- **Guide Practice**
 - Create space to spend one-on-one time with each of your students while others practice or explore movements. Repetition of movements anchors

the actual learning and sliding experience. Guided practice also lets you handle an ability split. Challenge your more advanced students with difficult tasks while you spend individualized time on guests who may be struggling. This also gives students independence while allowing you individualize the lesson.

- **Review and Preview**

- At the end of the lesson, make sure to review the experience, preview the next lesson, and invite your students back to your school and the sport. The debrief is an opportunity for your students to discuss their progress and the goals they accomplished. This content should come from the student. It is your job to facilitate the debrief and make a link to what another day on snow would do for them.

(Adapted from: “Delivering the Beginner Experience” Course, PSIA/AASI)

APPENDIX J

Different Learning Styles

VAK Model - Learning Preferences - create multisensory lessons (describe a skill, demonstrate a skill, then have them try the skill)

- V - Visual - pictures, images and demonstrations
- A - Auditory - descriptions, talking about experiences
- K - Kinesthetic - process through feelings and experiences

(Adapted from: “Delivering the Beginner Experience” Course, PSIA/AASI)