

Handlebar Volunteer Training Guide

THE HANDLEBAR
BICYCLE CO-OP



Dickinson

Dickinson 

CENTER FOR SUSTAINABILITY
EDUCATION

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The Handlebar

The Handlebar is a sustainability living laboratory project of the Center for Sustainability Education (CSE) launched in 2011 by students, faculty and staff. CSE's Sustainability Projects Coordinator manages The Handlebar and supervises the Biking@Dickinson Interns. The Sustainability Projects Coordinator and the Biking@Dickinson Interns coordinate volunteers to staff The Handlebar and assist Handlebar Users in repairing their own bikes. Handlebar Users and Volunteers can be students, staff, or faculty.

Dickinson's Bicycle Cooperative

A cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" according to the International Cooperative Alliance.¹

For the Handlebar, being a cooperative means that Handlebar Users, Volunteers, Biking@Dickinson Interns, and CSE are all stakeholders working together to improve our community by promoting, educating, and engaging Dickinsonians with biking and sustainable transportation. The Handlebar is a key component of Dickinson's larger sustainability and bicycling program, Biking@Dickinson.

Biking@Dickinson

Biking@Dickinson is an initiative comprised of programs and infrastructure such as:

- The Handlebar
- Red Bikes
- Green Bikes
- Biking@Dickinson Blog - blogs.dickinson.edu/dickinsonbikes
- Biking listserve - biking@lists.dickinson.edu
- Bike storage
- Build-a-Bike
- Community engagement with Recycle Bicycle Harrisburg and LifeCycle
- Bike racks, shelters and campus infrastructure
- Bike safety and advocacy
- Education and trainings

Biking@Dickinson by CSE to make Dickinson and the Carlisle community a more bicycle-friendly environment with the guidance of the Bicycle Advisory Committee (BAC).

¹ Statement on the Cooperative Identity. Archived 4 February 2012 at the Wayback Machine. International Cooperative Alliance.

The Bicycle Advisory Committee

The BAC is comprised of students, staff, faculty, and community members. The BAC works to develop a comprehensive Bicycle Plan for Dickinson that:

- Promotes the engineering of a comprehensive, connected and well-maintained network,
- Offers diverse bicycle education programs for campus cyclists and motorists,
- Maintains and expands The Handlebar, Dickinson's Bicycle Co-Op
- Encourages and incentivizes cycling for students, faculty, and staff
- Continue developing enforcement for bike riding & parking, cyclists and all road users, and
- Develops evaluation plans and procedures to assess all elements of the Comprehensive Bicycle Plan as it develops.

The efforts of this committee and The Handlebar has provided Dickinsonians with expanded opportunities to engage with the campus and Carlisle communities in ways that are educational, provide a public benefit, and encourage sustainable behaviors.

How is The Handlebar a CSE Living Laboratory?

The Handlebar strengthens Dickinson's living laboratory for sustainability education by providing a context for meaningful service, community building, resource sharing and experiential learning. In The Handlebar, students, faculty and staff work as leaders and volunteers assisting fellow members of the Dickinson Community to learn the skills of bike repair and maintenance, building their own bike mechanic, creative problem solving, and leadership skills, participating in a program that reclaims and reuses materials to provide a valuable environmentally-friendly benefit to the community, and promoting life skills for more active, engaged, and sustainable living.

Why Volunteer at The Handlebar?

Volunteering at The Handlebar can be a very rewarding part of being a Dickinsonian. Volunteers are crucial to making The Handlebar operate efficiently, effectively, and safely, but in return, Volunteers have opportunities to:

- Build and develop skills such as oral communication and public speaking, mentoring and training, supervision and leadership, customer service, analytical and critical thinking, problem solving, planning and organization, research, mechanical, and administrative.
 - For example, Volunteers build and develop these skills in The Handlebar by:
 - Helping diagnose problems with other people's bicycles and teaching them how to repair their own bicycle using novel tools and equipment
 - Preparing The Handlebar for open hours by organizing and identifying parts and supplies that need to be restocked
 - Leading, mentoring, and supervising other Users and Volunteers to become better bicycle mechanics or riders

- Serve the College and Community.
- Be exposed to Sustainability@Dickinson programs and opportunities.
- Work towards fun incentives.
- Connect with others around bikes and biking.
- Learn, have fun and make friends.

Levels of Handlebar Engagement

There are many different ways to engage with The Handlebar; you can be casual Users, a more committed Volunteer, or a dedicated Biking@Dickinson Intern. All Handlebar Users share a set of responsibilities.

All Handlebar Users' Responsibilities

- Respect yourself, other Handlebar Users, and The Handlebar space, tools, and supplies
- Seek solutions to challenges yourself before asking others for help
 - The Handlebar is a trial-and-error learning space.
 - Think critically and use resources such as the bicycle mechanic books, Google, Youtube, and other Users, Volunteers, and Biking@Dickinson Interns
- Be helpful, listen to advice, and clean up after yourself
- Share your knowledge, experience, and love of biking with those around you

Specific Handlebar User Groups' Responsibilities

Handlebar Users

Everyone who comes into The Handlebar is a User. Whether they are coming to fix their bike or just coming to hang out, they are a Handlebar User. Please encourage them to keep coming! Users are critical to The Handlebar. The shop would be nothing without them.

Handlebar Volunteers

Volunteers have attended Volunteer Training and shown a commitment to volunteering helping others in The Handlebar.

When volunteering, i.e., not working on their own bicycles, Volunteers will:

- Guide Users to repair their own bicycles – It's not the job of Volunteers to repair other people's bicycles or know everything about bicycle mechanics.
- Help keep records and the shop clean, organized, and safe
- Help open and close The Handlebar

Biking@Dickinson Intern

Biking@Dickinson Interns work for CSE to improve, expand, and educate on biking programs, infrastructure, and events at Dickinson. Biking@Dickinson Interns are Handlebar Users and Volunteers first line of contact regarding questions, concerns, or needs regarding The Handlebar, Biking@Dickinson programs or infrastructure, and CSE.

When working as the Biking@Dickinson Intern, i.e., not working on their own bicycles or as Volunteer, Biking@Dickinson Interns will:

- Administer Handlebar Users and Volunteers
- Ensure Volunteers open and close The Handlebar
- Ensure accurate records are kept, such as:
 - Volunteers helping Users sign in
 - Volunteers recording their time
- Assist Volunteers in helping Users' repair their own bicycles

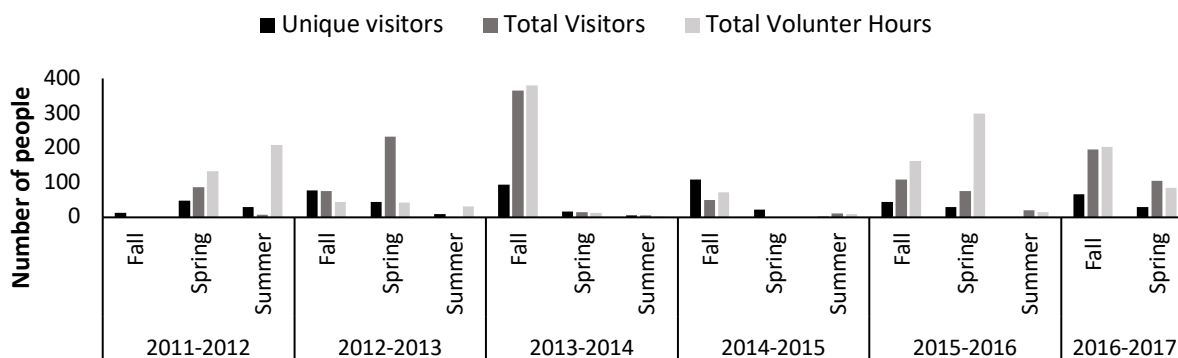
Volunteer Incentives

Volunteer hours only count when they are properly recorded on the User and Volunteer Log (see Handlebar Log Example on the last page of this guide). Volunteer hours are carried over from previous semesters. Incentives are subject to change based on availability.

Table 1. Handlebar Volunteer Incentives.

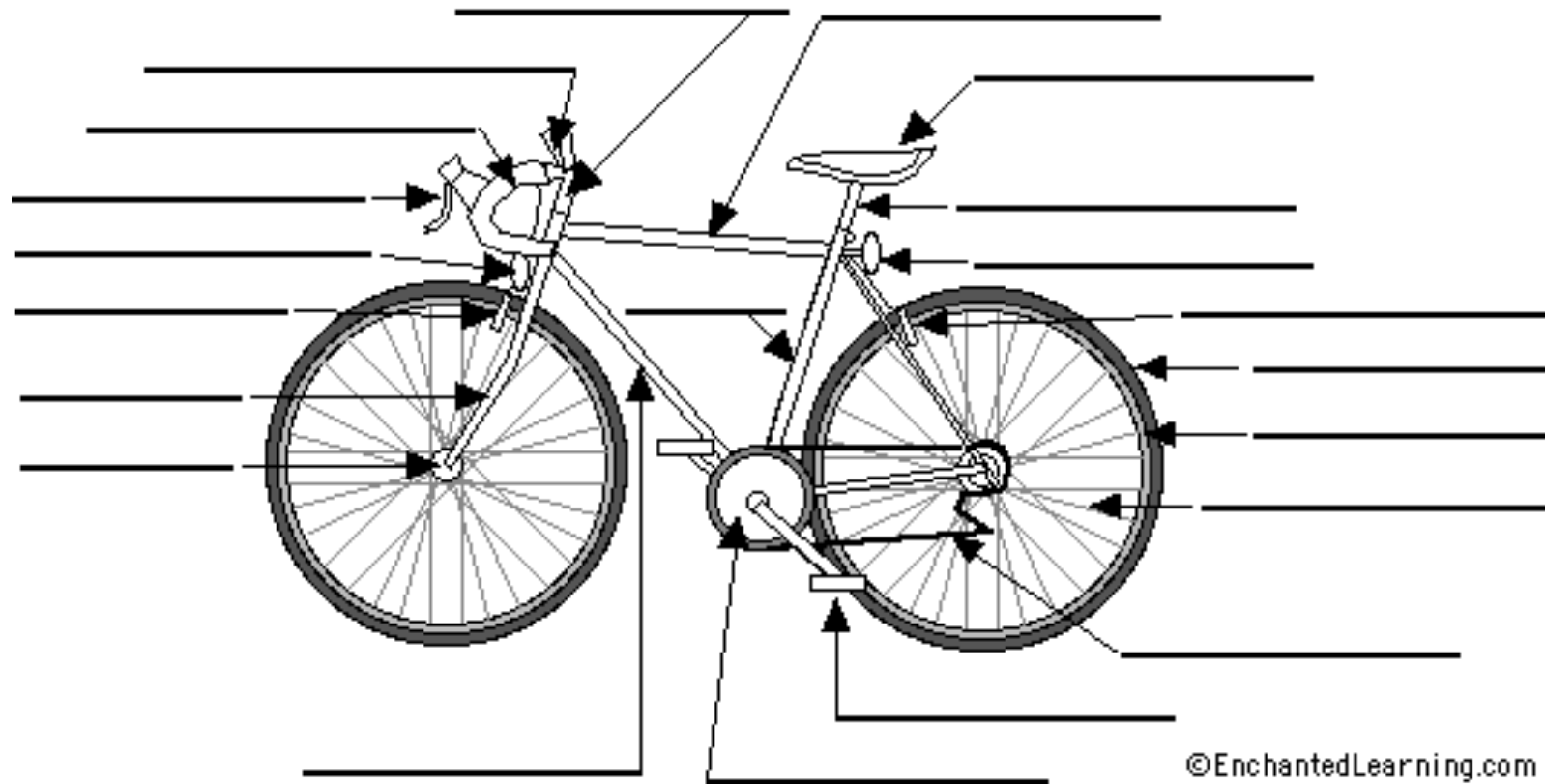
Hours Volunteered	Incentives
15 hours	Saddle bag or Dickinson Biking Hat
25 hours	Front and rear bicycle lights
50 hours	Bicycle multi-tool

Handlebar User Statistics



Bicycle Parts Exercise

Diagram - label me!



Bicycle Parts List

brake lever - the hand lever used to activate the brakes.

chain - it transfers the energy from the motion of the pedals to the back wheel.

chain wheel - the large wheel on which the chain is held, near the pedals.

down tube - the tube that attaches the.

front brake - it stops the front wheel.

front fork - it attached the front wheel to the bicycle.

front reflector - a safety device in the front of the bike that lets cars see you at night.

handlebar stem - this supports the handlebar.

handlebars - where you hold onto the bicycle to steer it.

hub - the central part of a wheel.

pedal - where your feet go to power the bicycle.

rear brake - it stops the rear wheel.

rear reflector - a safety device in the back of the bike that lets cars see you at night.

rim - the support of the wheel.

saddle - the seat.

seat tube - the tube that supports the seat post.

seat post - it supports the seat.

shift levers - the levers on the handlebars used to shift gears.

spokes - the thin, metal wires that attach the rim to the wheel hub.

tire - the inflated, rubber part of the wheel.

top tube - the tube that attaches the handlebar stem to the seat post.

Volunteers Guidance

General

- Report any concerns, needs, or accidents to the Center for Sustainability Education.
 - CSE Biking@Dickinson Interns and CSE Staff - biking@dickinson.edu
- If you have a bike that needs repair and needs to remain in The Handlebar briefly (one week or less), make sure you tag it with your name and phone number.
- Do not “store” your bicycle in the Handlebar. Space is extremely limited.
 - Lock it outside in a bicycle rack.
 - Bring it to CSE (Kaufman 190) for long-term storage during winter and summer breaks.
- The Handlebar operates on a ‘Swap Shop’ system for used parts and labor is always free. Some new parts are available for *purchase* such as chains, cassettes, tubes, and tires. Locks are also available for *purchase*. These new parts are purchased by CSE and donations are accepted to offset these costs.
- If someone hurts themselves, make use of the first aid kit and Call DPS if it’s serious!!
- We cannot serve anyone under the age of 18 due to legal liability issues.
- We do not serve the Carlisle community – only the Dickinson Community.
- Never let anybody’s bike go out of the shop if it is unsafe to ride, for example, with bad brakes. If someone hurts themselves due to something we did or did not do – that could be the end of the shop.
- Utilize the Bicycle Tune-up Checklist (see second to last page of this guide) to ensure bicycles are safe to operate once they leave The Handlebar.
- Keep the shop clean and organized.

Record Keeping

- Make sure you note your volunteer time in the log for every visit.
- Make sure that all users sign a User liability waiver on the iPad by the door
- Make sure you signed a Volunteer liability wavier (pink).
- Check all bikes to see if it has a Dickinson registration sticker on it. If not, have the student fill out the registration form, find the serial number on the bike for them so they can write it down, then send them off to DPS to get their sticker.

Shop Etiquette

- Make everyone feel welcome!
- Introduce yourself to visitors, and visitors to others in the shop
- Welcome people into the shop who seem to be hovering clueless outside the door!

- Offer to help and show how to do things – some people know nothing about bikes – not even how to inflate tires.

Tool Use and Safety

- Keep tools in the shop, off the floor, and on the stands or tables. Tools are trip hazards and can be damaged easily
- Keep the workspace clean and free of clutter (rags, multiple tools, etc.)
- Remember to put your tools back when you're finished. We don't have the luxury of multiple tool sets – searching for lost tools wastes everybody's time.
- When a rag is totally filthy – toss it in the trash.
- Use nitrile gloves when dealing with old greasy parts or cleaning agents. Degraded dirty greases and some cleaning agents can be hazardous.
- Use eye protection when there is any risk that parts you are working could go flying (cones and axles in axle vise, etc.)
- Make a practice of using the closed end of an open/closed combination wrench. Open end wrenches on bolts can slip – and you can cut or gouge your hands on various metal parts when that happens.
- Use screwdrivers as screwdrivers, not levers or devices to poke this or that metal part to make it fit or work. We don't want broken screwdrivers or screwdrivers accidents
- If you have to pull on a cable with a gripping tool (pliers, etc.), make sure your direction of pull is away from your face! A tool that has slipped on a cable can be a nasty projectile.
- Cut old tires in three or four pieces so they fit into the rubber recycling barrel
- If you have to toss a tube – at least save the valve core by removing it with the core tool.
- The yellow bolt cutter is never to leave the shop. Do not cut anybody's lock off their bike. Just forward them on to DPS.

What to do when there's nothing to do

Practice:

- Truing wheels
 - Use the practice bike to work on derailleur repair
- Read bike repair books

Handy Work:

- Find holes in popped tubes and patch
- Sort and ID parts (specifically)
- Pair pedals, shifters, breaks, etc. and zip tie together

Cleaning:

- Sweep, especially in corners and behind things
- Wipe countertops with Simple Green
- Wash out chain cleaner

- Hang tools in proper locations
- Put supplies away
- Take out trash and recycling
- Tidy up outside (make sure no metal on the ground)

Work on Bike Projects:

- Bike Blender
- Bicycle Lighting
- Jewelry, belts, and other wearables
- Bike trailers

Other:

- Document items that need to be ordered (parts, cleaner, grease, etc.)
- Brainstorm outreach ideas for biking
- Brainstorm other bike projects

At the end of the work session.

- Put all tools back
- Put all waste in the appropriate bin – empty bins if they are half full or greater.
- If it is Wednesday evening or Thursday morning, put the metal recycling bin outside near D-walk to be picked up by Facilities
- Clean off table
- Sweep floor
- Bring in sign
- Clean bicycle stands
 - Take all bikes out of the stands
 - Put all parts away in either the parts bins or in a project bin labeled with a person's name and phone number

Donations

- Please encourage people to leave donations in the donation jar.
 - Everything costs something, even the little things.
- Donations over \$75 need to be reported to CSE to be documented as a “gift” to the college.
- Please thank anybody that donates to The Handlebar.

Cash

- Please do not let the donation jar exceed \$75.

Checks

- If someone is compelled to write a check, please make the check payable to:
 - Dickinson College Center for Sustainability Education
- Notify Cody Rosenbarker or Handlebar Manager of any checks for deposit.

Bicycles or bicycle parts

- If bicycles or bicycle parts are donated, make sure they are tagged with the name of the person who left it.

Wheels²

Rim Tapes

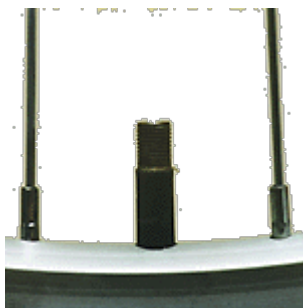
The interior surface of the rim sometimes has burrs which can damage inner tubes, and the ends of the spokes may also cause punctures. For this reason, rim tape is needed to protect the inside of the inner tube. If a rim has recessed spoke holes, the rim tape must withstand the air pressure in the tire. If the edges of the spoke holes are sharp, the tape also must resist being cut by them.

Some rim tapes are simple strips of rubber, similar to the rubber used to make the inner tube. These are adequate for use in wider rims without recessed spoke holes. Better rim tapes are of adhesive cloth or plastic. The rim tape must be just wide enough to fit the bottom of the rim. Too narrow and it doesn't cover what it needs to. Too wide, and it interferes with the tire.

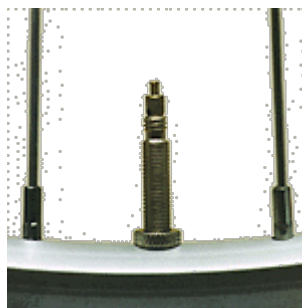
Rim-tape failure at a recessed spoke hole, and resulting puncture



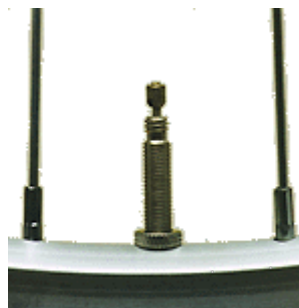
Valve Types



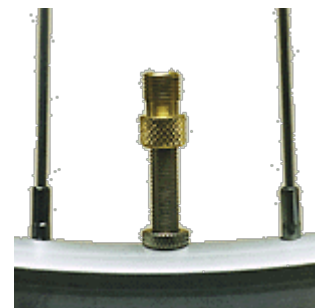
Schrader valve



**Presta valve
closed**



**Presta valve
open**



**Presta valve
with adaptor**

² Source: What every Cyclist Should Know about Flat Tires: <http://sheldonbrown.com/flats.html>

Types and Reasons for Flats

A tire goes flat because there is a hole in the inner tube. There may or may not be anything wrong with the tire itself. Flat tires can be divided into five types:

- 1) **Slow leaks** take long enough to go flat that the bicycle may actually be ridden, but the tire will need to be pumped up more often than it should. It is normal for a tube to lose air over a period of weeks. Slow leaks that take more than an hour or so to go down can often only be repaired by replacing the inner tube, since it may be impossible to find the hole.
- 2) **Punctures** are caused by running over sharp things which poke a hole through the tire and into the tube. Patching or replacing the inner tube is the fix for punctures, but don't forget to remove the pointy thing from the tire before you put it back on!
- 3) **Pinch Cuts** result from hitting stones, curbs, or sharp edges of holes in the road surface. When the tire hits a sharp edge hard enough, it compresses so that it bottoms out. The inner tube can get pinched between the rock and the rim. Pinch cuts sometimes ruin tires as well as tubes, but usually the tire will not be damaged.
- 4) **Blowouts** are sudden losses of air, usually accompanied by a loud BANG! Since the inner tube is just a rubber balloon, if you pump it up outside of a tire, it will stretch bigger and bigger the more air you put into it, until it pops.
- 5) **Obstructed or bad valves.** Practically all tubes have a powdery substance outside and inside the tube. This helps the tube slide inside the tire and allows it to inflate properly without sticking to itself. On very rare occasion, a brand-new tube will not hold air for long. This is because:
 - a) some of that powder from the inside of the tube has collected around or otherwise obstructed the inside of the valve core seating mechanism, or
 - b) the valve core was screwed in improperly. Remove the valve core (Schrader valve equipped tubes only) with a valve-core remover; clean off the powder on the black (or red) rubber valve seat on the core; reinsert the valve core and retighten with the valve tool. If the black/red valve seat has visible, non-concentric grooves on it - replace with a new valve core.
 - i) This situation tends to REALLY annoy people who will think you gave them a bad tube to start with - so make sure you explain the issue to them. If they're not convinced, just give them a brand-new tube (but check that valve first!).

Fixing a Flat Tire:

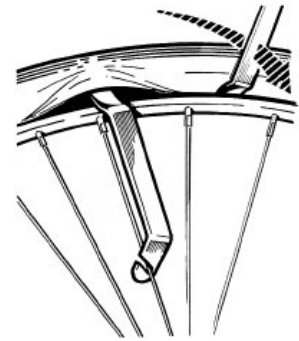
You Will Need: a pump; a patch kit, or a spare tube; tire levers; and a wrench that fits the axle nuts of your wheel, (you don't need wrenches if you've got quick release wheels)

Step 1: Take the Wheel Off

- Use wrenches to loosen axle nuts, or loosen quick-release.
- If your tire is completely deflated, you should be able to pull the tire through the brakes. Wiggle and pull hard if you need to! If you can't pull the tire through, you'll have to open the brakes by releasing the cable.

Step 2: Get the Tire Off the Wheel

- If the air valve is a Presta valve, you'll need to take off the lock nut at the base of the valve. You can use your fingers for this. A Schrader valve has no lock nut.
- Fully deflate the tire!
- Start on the opposite side of the valve – wiggle a tire lever beneath the tire edge, (called the 'bead'), and pry down to lift the bead out over the wheel's rim. Do the same thing with a second lever, about 6 inches away. Slide levers around the edge of the rim to encourage the tire off one side completely.
- Use your hands or tire levers to pull the other side of the tire off the wheel. Next, pull the tube out!

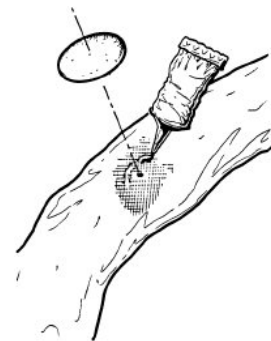


Step 3: Find Puncture Hole or Tear

- Inflate the tube, (and don't worry, you can't over-inflate it). Listen and feel for the air leak. For hard-to-find holes, put the tube under water, (in a bucket or kitchen sink), and watch for bubbles.
- Once you've found the hole, mark it with tape, or chalk. Look and feel for any other holes.

Step 4: Patching a Tube

- Make sure the area around the puncture is clean and dry, otherwise the patch might not stick. You can deflate the tube a bit, but leave some air in while patching.
- In your patch kit, you'll find a metal tool, (or sometimes sandpaper) – use this tool to rough up the area around the hole. Apply glue to a larger area than what the patch would cover. Let the glue sit until it's almost dry. Most kits will have instructions, and will indicate how long to let the glue sit for.
- Apply your patch and press down hard with both thumbs. Hold the patch down for 30 seconds. You can use the levers to apply pressure if your thumbs are sore.
- Inspect the patch; make sure there is a good seal around the whole patch. Your tube will leak if it's not fully sealed.



Step 5: Inspect Your Tire

- Before you put your newly patched tube back in the tire, inspect your tire inside and out. Look and feel with your fingers for anything that might have caused the puncture, (staples, screws, rocks, glass, etc.). BUT, be very very careful, especially when feeling with your fingers – go slowly! Use a rag to wipe the inside of the tire, and while you're at it, wipe the rim clean too.
- Inspect the wheel rim, and the rim tape. Some wheels have rim tape, some don't. Rim tape is a long, thin piece of rubber lining the inside surface of the rim; it helps to protect the tube from the spoke ends, metal burrs and holes in the rim. If you see your rim tape is not installed properly, straighten it out. If there's a hole in the rim tape, replace it, or use tape as a quick fix. Electrical tape works well!

Step 6: Stick Your Tube Back in the Tire, Then Back Onto the Wheel

- It's easier to get your tube back in the tire properly if the tube is partially inflated. Make sure you get it in straight.
- Place one edge of the tire (the bead) around one side of the rim, as far as you can get it, then use your tire levers again to get the bead over entirely. Your tire levers are your best friends!
- Then, with one bead over the rim, use the same method to get the other on as well. You may need to use your hands, (and all of your strength), to pull the last bit over the rim.

Step 7: Finishing Touches

- Before you put your wheel back on the bike, massage the tire with your hands, to make sure the tube is straight, not twisted or pinched anywhere.
- Also, make sure the tire treads are going in the right direction »> forwards rolling!
- Put your wheel back on, tighten axle nuts or quick release, reconnect brake cables, then put some air back in your tire!

Preventing Flat Tires

- To prevent a pinch flat, make sure your tires are properly inflated! Each tire has a preferred air-pressure range, which is measured in psi (pounds per square inch). Look on the tire sidewall for the recommended pressure. Also, periodically inspect your tires for flat spots, tears, cracks, or embedded objects; these can all increase your risk for a flat. If you suspect you've got a vulnerable tire, you may want to bring a small pump, an extra tube (or patch kit), and tire levers on your bike trips, just in case!

Contacts

Biking@dickinson Interns: biking@dickinson.edu

General Information: biking@dickinson.edu

Biking@dickinson Blog: <http://blogs.dickinson.edu/dickinsonbikes/>

Dickinson Biking Listserve: biking@lists.dickinson.edu

Bicycle Tune-up Checklist

Brakes

- ☐ Pads are worn or contacting rim improperly. Replace or reset.
- ☐ Check for loose. Frozen/stiff brake assemblies: arms, pads releases, etc. Tighten, re-center, and lube if necessary
- ☐ Check for loose brake cables. Tighten cables.
- ☐ Cables have frayed ends. Cut and add cable end cap, or replace cable
- ☐ Check for disk brake rotor trueness.

Derailleurs

- ☐ Check for loose derailleur cables. Tighten
- ☐ Check for damage – bent rear hanger, frozen or rusted, broken pulley wheels.
- ☐ Check shifting. Adjust front and rear derailleur.

Chain/rear gears

- ☐ Check for excessive wear with chain checker (.75 maximum stretch allowable). Replace chain if necessary
- ☐ Check for excessive grease or crud. Use chain-cleaning tool **SPARINGLY**.
- ☐ Check for dry/rusty chain. If the chain kinks on more than two links, replace chain. Lube chain lightly, wipe off excess.
- ☐ Check for wear and straightness of gear teeth

Crankset/Pedals

- ☐ Check for loose crank arms, tighten bolts
- ☐ Check for loose axle/cup/cone or sealed bracket.
- ☐ Check for bent chainrings.
- ☐ Check pedals so they spin freely.
- ☐ Check pedals for tightness.

Wheels

- ☐ Check for loose cones on axles. Tighten.
- ☐ Check for trueness.
- ☐ Make sure fixing bolts or quick releases are tight.

Tires

- ☐ Check for excessive wear: peeling/worn tread, drying/cracked sidewalls, tread separation. If any of the above: replace tire.
- ☐ Check for set beads – deflate and reset bead, reinflate
- ☐ Check for tire pressure

Headset

- ☐ Check for loose cup/cones and top locknut.

Handlebars/Stem

- ☐ Make sure brake and shifter assemblies are tight
- ☐ Make sure handlebars are firmly tightened
- ☐ Make sure STEM is firmly tightened

Saddle

- ☐ Make sure saddle is tight on seatpost
- ☐ Make sure seatpost bolt or quick release is tight

Miscellaneous

- ☐ Reflectors (front & rear) – MAKE SURE THE BIKE HAS THEM.
- ☐ Lights/generator function
- ☐ Fenders, baskets, racks, bell(s) are tight
- ☐ Missing bolts and nuts anywhere on the bike
- ☐ _____
- ☐ _____

Handlebar User and Volunteer Log Example

HANDLEBAR USER & VOLUNTEER LOG														
DAY	DATE	USERS WITH BIKES	USERS WITHOUT BIKES	USERS WITH GREEN BIKES	VOLUNTEER INITIALS WITH HOURS (LEGIBLY PLEASE)									