

# Bicycle Mechanics and Repair Decal

Mechanical Engineering 98/198

Spring '11

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## Facilitator Contact Info

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## Course description

This course is an introduction to basic bicycle maintenance and repair. Students will learn the fundamentals of bicycle safety, mechanics, and component functionality. The course is open to all students, regardless of experience level. The goal of this decal is to create a greener, healthier, and more vibrant community by learning the basics of bike repair and sharing the knowledge with others.

## Course Format

1 hr. lecture per week.

During the lectures, students will learn the theory behind the basics of bicycle repair and get hands on experience on all components.

1 hr. field study every two weeks

For the field study, students will practice and improve their repair skills at Bike Day, a campus outreach event designed to help other students with their bicycle problems.

## Course learning objectives

### Safety

Bicycle safety, preventive maintenance, road awareness/rules, theft prevention, safety gear

### Bicycle mechanics and repair

Learn the functions of all components of the bicycle

Apply knowledge of components in repair and maintenance

Troubleshoot common problems

## Required texts

1. *Big Blue Book of Bicycle Repair* by C. Calvin Jones

2. *Bicycle: The History* by David V. Harlihy

## Evaluation procedures

Points will be given for attendance, both in class and during field study.

One short research paper will be assigned on the topic "Improving the Bicycle Infrastructure of UC Berkeley" or another instructor-approved topic.

## Attendance

Two absences are allowed. Any absences beyond two must be made up at Bike Day, up to a maximum of 2 make-up sessions. Excused absences that are made up will not count towards the absence tally.

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## Class schedule

The schedule presented below is tentative; course content and pacing may change based on the needs and requests of the students.

Week	Date	In class activities	Reference Video on BicycleTutor	Assignments due
1	January 24 <sup>th</sup>	<b>Introduction</b> Bicycle safety Theft prevention Bicycle components handout Basic bike tools handout List of bicycle-related resources		
2	January 31 <sup>st</sup>	<b>Bicycle upkeep and maintainance</b> Bicycle fitting Repair on the road Air, lube, and grease Inner tube repair and tire changing	2, 7, 8, 17, 18, 25, 26, 28, 35, 37, 28	
3	February 7 <sup>th</sup>	<b>Brakes</b> Cantilever, center pull, dual pivot, v brakes, disc brakes, single pivot, etc., squeaky brakes	21, 22, 29, 34	
4	February 14 <sup>th</sup>	<b>Shifters/front derailleur</b> Cables/housing Adjusting shifting Setting limiters	5, 11, 22, 31, 41, 45, 46	
5	February 28 <sup>th</sup>	<b>Rear derailleur</b> Replacement, initial setup Changing shiftpoints, Setting limiters	1	
6	March 7 <sup>th</sup>	<b>Chain, Cassette, Freehub, Sprockets</b> Breaking chains, determining length, diagnosing wear, Cassettes and Freehubs	3, 4, 16, 17, 20, 23, 24, 39, 40, 42	
7	March 14 <sup>th</sup>	<b>Wheels</b> Wheel design Replacing spokes Truing – fixing wobble and hop	13, 14	
8	March 28 <sup>th</sup>	<b>Hubs</b> Tensioning bearings Overhauling hubs	12, 15	
9	April 4 <sup>th</sup>	<b>Headset, Handlebars</b> Threaded and threadless headsets Handlebar grips and tape	19, 27, 33, 36	
10	April 11 <sup>th</sup>	<b>Bottom bracket</b> Removing cranks Cartridge and adjustable type brackets	6, 9, 10, 30	
11	April 18 <sup>th</sup>	<b>Fun stuff</b> Demonstrations of cool things people do on bikes. Videos, live demonstration, etc.		Paper due
12	April 25 <sup>th</sup>	<b>Final Day</b> Bicycle-related outreach in the Bay Area Topics on demand Evaluations		