

STRANDS AND STANDARDS

BICYCLE REPAIR TRAINING



Course Description

This course prepares students to understand and demonstrate proper bicycle repairs, including steering systems, braking systems, drive/shifting systems, and suspension systems. Students will also understand and demonstrate proper safety procedures and gain an understanding of bicycle anatomy and the appropriate tools necessary to maintain them.

Intended Grade Level	9-12
Units of Credit	1.0
Core Code	40.11.00.00.010
Concurrent Enrollment Core Code	N/A
Prerequisite	N/A
Skill Certification Test Number	N/A
Test Weight	N/A
License Area of Concentration	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Bicycle Repair Training
Endorsement 2	N/A
Endorsement 3	N/A

STRAND 1

Students will understand and demonstrate safe practices.

Standard 1

- Pass a safety test with 100% proficiency.
- Wear proper PPE.
- Understand the importance of and practice shop cleanliness.

STRAND 2

Students will understand and use appropriate tools for bicycle building, tune-up, and repairs.

Standard 1

Operate a torque wrench:

- newton meters
- foot pounds
- Thread tapping and re-tapping:
- Thread pitch
- Common threads
- Reaming and facing metal frames
- Tools for bicycles:
- Spoke nipple wrench
- Chain breaker
- Pin spanner
- Truing stand

STRAND 3

Students will understand the basic anatomy of bicycle systems and their interactions.

Standard 1

- Frame
- Wheels
- Steering
- Brakes
- Drive/Shifting
- Suspension

STRAND 4

Students will understand the parts and adjustments of wheel systems.

Standard 1

- Identify the parts of a wheel system
 - Hub:
 - Disc Brakes

- Spokes
- Rim
- Tubes:
 - Presta / Schrader Valves
- Tire
- Understand the procedures for wheel truing:
 - Lateral
 - Radial
- Setup tubeless road and mountain tires:
 - Taping rims
 - Install valve stems
 - Install sealant
 - Troubleshoot issues
- Replace/repair tubes and tires:
 - Locate tube punctures
 - Patch site prep and installation
 - Check tire for wear and sharp objects

STRAND 5

Students will understand the parts and adjustments of the steering system.

Standard 1

- Identify parts of steering system:
 - Handlebars
 - Stem
 - Headset
 - (opt.) Detangler/Gyro/Rotor
 - Fork
- Identify various handlebar styles:
 - Properly align stem with front wheel

STRAND 6

Students will understand the parts and adjustments of the braking system.

Standard 1

- Identify types of bicycle braking:
 - Rim
 - Caliper
 - Cantilever
 - "V"
 - Disc
 - Drum
 - Coaster
 - Fixed Gear

- Identify the basic parts of a rim braking system:
 - Brake lever
 - Adjusting barrel/nut
 - Cable
 - Arms
 - Block/Pad
- Adjust brakes to stop the bicycle with appropriate pressure on the levers

STRAND 7

Students will understand the parts and adjustments of the drive/shifting system.

Standard 1

- Identify types of bicycle drives:
 - Fixed
 - Coaster
 - Geared
- Identify the parts of a traditional geared drive system:
 - Pedal
 - Crank
 - Chainrings
 - Bottom bracket
 - Chain
 - Rear cassette
- Identify the parts of the shifting system:
 - Front/rear shift levers
 - Cables
 - Front/rear derailleurs
- Adjust derailleurs to shift smoothly between each gear or chainring:

STRAND 8

Students will understand the parts and adjustments of suspensions systems.

Standard 1

- Identify common suspension systems:
 - Front (fork)
 - Rear (frame)
- Understand suspension terminology:
 - Travel
 - Sag
 - Lockout
 - Compression Damping
 - Rebound Damping
- Perform a 30-hour suspension service
- Set proper suspension sag

STRAND 9

Students will understand the proper assembly and fitting of a bicycle.

Standard 1

- Understand optimal rider positions for different types of bicycles:
 - Road
 - Mountain
 - Hybrid
- Set seat and bar height for a rider

STRAND 10

Students will understand and demonstrate proper care and service cycles for a bicycle.

Standard 1

- Lubrication:
 - Chain
 - Cables
- Tire pressure
- Storage procedures
- Transportation methods

Performance Skills

- Translate shop talk to non-technical language understandable by customers
- Conflict resolution
- Teamwork
- Customer Service
- Follow repair service instructions