

# 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.

|                                      |                                     |
|--------------------------------------|-------------------------------------|
| <b>Intended Grade Level</b>          | 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                                 |
| <b>License Area of Concentration</b> | CTE and/or Secondary Education 6-12 |
| <b>Required Endorsement(s)</b>       |                                     |
| 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