

**Northwest Arkansas Community College**

(Workforce Division)

**Discipline Code**

BIKE

**Course Number**

1033

**Course Title**

Bicycle Drivetrain Systems

**Catalog Description**

This course covers, in-depth, bicycle drivetrains. Students will learn the theory and practice of bicycle drivetrains. Students will use knowledge of various cycling disciplines and apply them to drivetrain design, selection and repair. Students will work hands on to diagnose and repair drivetrain components.

**Prerequisites**

None. Enrolled in all BIKE 1000 level courses. BIKE 1003, 1013, 1023, 1033, 1043 advised as co-requisites.

**Credit Hours**

3 credit hours

**Contact hours**

45 lecture/lab contact hours

**Load hours**

3 load hours

**Semesters Offered**

Fall, Spring & Summer

**ACTS Equivalent**

N/A

**Grade Mode**

A-F

**Learning Outcomes**

Students completing this course will:

- Choose appropriate drivetrain combinations for major cycling activity types.
- Determine appropriate replacement parts for repair of all components of drivetrain.

- Competently select, install, and adjust the following parts: Chainring, cassette, freewheel, front and rear derailleur, shifters, cables and housing.
- Recognize, diagnose, and solve common drivetrain problems.
- Update firmware and components of an electronic drivetrain.

### **BIEA (Bicycle Industry Employers' Association) Program Outcomes Supported**

- Student will demonstrate ability to assemble and repair all types of bicycles currently in use.
- Apply foundational skills and knowledge to continuing professional development in response to changes in bicycle technology.
- Apply knowledge of systems and measures to find solutions to novel repair situations.
- Student is able to provide solutions that balance business, customer, and professional goals.
- Demonstrate ethical conduct in all job and personal cycling activities that maintains an image appropriate for the profession.

### **General Education Outcomes Supported**

- Students develop higher order thinking skills.
- Students can write clear, coherent, well-organized documents, substantially free of errors.
- Students develop effective oral communication skills.
- Students can achieve mathematical literacy.
- Students develop information literacy.

### **Standard Practices**

#### **Topics list**

- Drivetrain History and Development
- Drivetrain Component Selection and Compatibility
- Drivetrain Component Installation
- Diagnosis and Repair of Common Drivetrain Problems
- Special Considerations for Electronic Drivetrains

#### **Learning activities**

Courses must, at a minimum, cover the core learning outcomes for each topic. Faculty may add to these outcomes but may not omit any of them.

- Laboratory exercises should average between 2-3 hours each week and include all applicable elements of the Barnett's Bicycle Industry Manual modules for the lesson and outcome for assessment.
- Lab safety and equipment orientation and enforcement of safety protocols is the responsibility of each faculty. A standard lab safety PowerPoint will be provided to faculty for training. Scoring

100% on a mandatory department-provided lab safety quiz is required before students may participate in lab.

- Since all general education outcomes are supported by specific course and program outcomes, all instructors should include learning activities that develop these outcomes in their courses and identify them in course syllabi. Instructors should describe how these activities will be evaluated in their course syllabi and/or reflected in their gradebooks.

### **Assessments**

Written exams, quizzes, and class assignments; class participation; lab-based performance profiles and competency-based demonstration of mastery, and digital work including, but not limited to, group work, discussion, and projects done in virtual environment and/or college's LMS.

### **Grading guidelines**

- Students will score 80% 'Satisfactory' or higher on a rubric scoring essays on selecting drivetrain properties.
- Students will correctly identify 75% or more of the correct replacement parts on a multiple-choice exam.
- Students will score 80% 'Satisfactory' or higher on rubric concerning physical demonstration of drivetrain component installation.
- Students will score 80% 'Satisfactory' or higher on rubric evaluating problem solving in drivetrain repair.
- Students will score 80% 'Satisfactory' or higher on rubric concerning physical demonstration of computer-drivetrain interfaces.