**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

# **GENERAL COURSE INFORMATION**

Course Number: AUTO 1126

Course Title: Manual Transmissions

Credit Hours: 3

Prerequisite: None

Division/Discipline: Workforce Training and Economic Development/Automotive Technology

Course Description: In this course students explore theory and perform analysis/service of manual transmissions and drive train systems of the automobile.

# **INSTRUCTOR INFORMATION**

# **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at disabilityservices@bartonccc.edu.

1. **COURSE AS VIEWED IN THE TOTAL CURRICULUM**

Manual Transmissions and Drive Train is a Kansas aligned course and is one of eight NATEF certified areas of Automotive Repair.

# **ASSESSMENT OF STUDENT LEARNING**

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

1. Identify, evaluate and interpret the theory and operation of General Drive Train systems.

Linked External Standards: NATEF 3.A.1, thru 3.A.6.

1. Complete service work orders.
2. Identify and interpret drive train concern; determine necessary action.
3. Drain and refill manual transmission/transaxle and final drive unit.
4. Clutch Diagnosis and Repair.

Linked External Standards: NATEF 3.b.1, thru 3.B.8.

1. Diagnose clutch noise, binding, slippage, pulsation and chatter; determine necessary action.
2. Inspect, analyze and repair clutch pedal linkages and systems and determine needed repairs
3. Inspect engine block, core plugs, rear main engine oil seal, clutch (bell) housing, transmission/transaxle case mating surfaces, alignment dowels; determine necessary action.
4. Measure flywheel run out and crankshaft end play; determine necessary action.
5. Transmission/transaxle Diagnosis and repair.

Linked External Standards: NATEF 3.C.1, thru 3.C.17

1. Remove and reinstall transmission/transaxle.
2. Disassemble, clean, and reassemble transmission/transaxle components.
3. Verify, inspect, analyze and repair manual transmission/transaxle concerns.
4. Describe and verify the operational characteristics of an electronically controlled manual transmission/transaxle.
5. Drive Shaft and Half Shaft, Universal and Constant-Velocity (CV) Joint Diagnosis and Repair.

Linked External Standards: NATEF 3.D.1 thru 3.D.6.

1. Diagnosis constant-velocity (CV) joint noise and vibration concerns; determine necessary action.
2. Diagnose universal joint noise and vibration concerns; perform necessary action.
3. Inspect, service and replace shafts, yokes, boots, and CV joints.
4. Check shaft balance and phasing; measure shaft run out; measure and adjust driveline angles.
5. Drive Axle Diagnosis and Repair.

Linked External Standards: NATEF 3.E.1, thru 3.E.11.

1. Diagnose noise and vibration concerns; determine necessary action.
2. Disassemble, inspect, measure and evaluate differential assembly determine necessary action.
3. Reassemble and reinstall differential case assembly; measure adjustments and settings and verify correct repair.
4. Limited Slip Differential Diagnosis and Repair.

Linked **External** Standards; NATEF 3.E.2.1 thru 3.E.2.4.

1. Diagnose, evaluate noise, slippage, and chatter concerns; determine necessary action
2. Inspect and reinstall limited slip differential components.
3. Drive Axle Shaft Diagnosis and Repair.

Linked External Standards; NATEF 3.E.3.1, thru.3.E.3.5.

1. Inspect, analyze and diagnose drive axle shafts, bearings, and seals for noise, vibration, and fluid leakage concerns, determine necessary action.
2. Inspect and replace drive axle shaft, seals, bearings, and retainers.
3. Four-Wheel Drive/All-wheel Drive Component Diagnosis and Repair.

Linked External Standards; NATEF 3.F.1, thru 3.F.8.

1. Diagnose noise, vibration and unusual steering concerns; determine necessary action.
2. Inspect, adjust and repair shifting controls (mechanical, electrical, and vacuum), bushings, mounts, levers, and brackets.
3. Remove and reinstall transfer case.
4. Disassemble, service and reassemble transfer case and components.
5. Diagnose, test, adjust and replace electrical/electronic components of four-wheel drive systems.
6. **INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS**

# **TEXTBOOKS AND OTHER REQUIRED MATERIALS**

# **REFERENCES**

# **METHODS OF INSTRUCTION AND EVALUATION**

# **ATTENDANCE REQUIREMENTS**

# **COURSE OUTLINE**