



Broward Community College

Course Outline

LAST REVIEW: 2005-2006
(i.e. 2003-2004)

NEXT REVIEW: 2010-2011
(i.e. 2008-2009)

STATUS: A

COURSE TITLE: Manual Drive Train and Axles

COMMON COURSE NUMBER: AER2398C

CREDIT HOURS: 4

CONTACT HOUR BREAKDOWN
(per 16 week term)

CLOCK HOURS:

Lecture: **48** Lab: **48**

(Voc. Course ONLY)

Clinic: Other: **89**

PREREQUISITE(S):

COREQUISITE(S):

PRE/COREQUISITE(S):

COURSE DESCRIPTION: A course designed to teach the principles and operations of manual transmissions and transaxles, clutches, overdrive units, pressure plates, propeller shafts, differentials, and drive axles and to provide practical experience in diagnosing, removing, maintaining, and repairing transmissions and drive systems. Topics include manual transmissions, overdrive systems, drive lines, differentials, and axles. Applications include front wheel drive, rear wheel drive, 4-wheel drive and all wheel drive. Special emphasis will be given to safety procedures, and the specific tools and instruments to be used.

UNIT TITLES:

1. Manual Transmission and Transaxle Theory
2. Manual Transmission and Transaxle Maintenance and Repair
3. Clutch and Pressure Plate Theory
4. Clutch and Pressure Plate Maintenance
5. Differential, Propeller Shaft, and Drive Axle Theory
6. Differential, Propeller Shaft, and Drive Axle Maintenance

I. Course Overview:

Upon successful completion of this course, the students should be able to discuss, diagnose, remove, maintain, and repair manual transmissions and transaxles.

II. Units:

Unit 1. Manual Transmission and Transaxle Theory

General Outcome:

- 1.0 The students should be able to discuss the operating principles and construction of automatic transmissions and transaxles.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 1.1 Describe the operation of a typical manual transmission and a typical transaxle.
- 1.2 Identify each component and relate each to its adjacent components.
- 1.3 Identify 3-speed, 4-speed, 5-speed, 6-speed, manual transmissions and manual transaxles.
- 1.4 Describe how the various transmissions and transaxles differ in construction and operation.

Unit 2. Manual Transmission Maintenance and Repair

General Outcome:

2.0 The students should be able to discuss the maintenance requirements and repair procedures of manual transmissions.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

2.1 Perform all scheduled manual transmission maintenance procedures with the aid of shop manuals and factory service bulletins.

2.2 Identify the causes of manual transmission failures and poor performance through reference to shop manuals and factory service bulletins.

2.3 Perform selected manual transmission repairs (including removing, rebuilding, and reinstalling) with the aid of shop manuals and factory service bulletins.

Unit 3. Clutch and Pressure Plate Theory

General Outcome:

3.0 The students should be able to discuss the operating principles and construction of clutches and pressure plates.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 3.1 Describe the operation of clutches and pressure plates.
- 3.2 Identify the various types of clutches and pressure plates currently in use.
- 3.3 Explain how various types of clutches and pressure plates differ in construction and operation.

Unit 4. Clutch and Pressure Plate Maintenance

General Outcome:

4.0 The students should be able to discuss the maintenance requirements and repair procedures of clutches and pressure plates.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Perform all scheduled clutch and pressure plate maintenance and adjustment procedures with the aid of shop manuals and factory bulletins.
- 4.2 Identify the causes of clutch and pressure plate failures and poor performance through reference to shop manuals and factory service bulletins.
- 4.3 Perform selected clutch and pressure plate repairs (including removal and replacement) with the aid of shop manuals and factory service bulletins.

Unit 5. Differential, Propeller Shaft, and Drive Axle Theory

General Outcome:

5.0 The students should be able to discuss the operating principles and construction of differentials, propeller shafts, and drive axles.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Describe the operation of typical differentials, propeller shafts, and drive axles.
- 5.2 Identify each component and relate each to its adjacent components.
- 5.3 Identify the various types of differentials, propeller shafts, and drive axles.
- 5.4 Explain how various types of differentials, propeller shafts, and drive axles differ in construction and operation.

Unit 6. Differential, Propeller Shaft, and Drive Axle Maintenance

General Outcome:

6.0 The students should be able to discuss the maintenance requirements and repair procedures of differentials, propeller shafts and drive axles.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 6.1 Perform all scheduled differential, propeller shaft, and drive axle maintenance with the aid of shop manuals and factory bulletins.
- 6.2 Identify the causes of differential, propeller shaft, and drive axle failures through reference to shop manuals and factory service bulletins.
- 6.3 Perform selected differential, propeller shaft, and drive axle repair (including removal, rebuilding, and reinstallation) with the aid of shop manuals and factory service bulletins.