

COURSE OUTLINE

Revised By: Doug Clapper & Howard Andersen

DATE: October 27, 2014

DEPARTMENT: Automotive Technology

CURRICULUM: Automotive Technology

COURSE TITLE: Manual Transmission, Transfer Cases and Drive Axles

COURSE NUMBER: AUT 114

TYPE OF COURSE: Vocational Preparatory

COURSE LENGTH: Normally 2 weeks

CREDIT HOURS: 3

LECTURE HOURS: 10

LAB HOURS: 40

CLASS SIZE: 20 maximum

PREREQUISITES: MVM 100 (Introduction to Automotive Technology I),
, MVM 102 (Introduction to Automotive Technology II),
AUT 112 (Manual Transaxles and Clutches), basic math
skills, and 9th grade or higher reading level (as evidence by
appropriate placement test scores), and/or instructor's
permission.

COURSE DESCRIPTION:

Contents include: Power flow and principles involving manual transmissions, transfer cases and drive axles; troubleshooting and diagnosing manual transmissions, transfer cases and drive axles; removal of manual transmission, transfer cases and drive axles from vehicle; disassemble, clean, inspect, overhaul and reassemble of manual transmission, transfer cases and drive axles; reinstall manual transmission, transfer case and drive axle in vehicle. In addition the function and construction of each component, as well as their diagnosis and service procedures will be covered. Instruction in safety, environmental awareness, human relations and leadership are taught as an integral part of this unit of study.

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Critical Thinking - Use problem solving skills to diagnose and repair manual transmission, transfer cases and drive axles problems. (SLO 4.1)
2. Technology – Proper use and care of manual transmission, transfer cases and drive axles repair tools and equipment. (SLO 5.1)

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PROGRAM OUTCOMES:

1. Inspect, diagnose, disassemble, repair, replace and service each of the major systems in various types of vehicles. (SLO 4.1)
2. Locate sources, make parts write-ups, calculate costs and explain repair or service. (SLO 2.1, 2.2 & 7.1)
3. Handle customer needs, complaints, questions and special challenges. (SLO 3.1 & 3.2)
4. Access and apply manufacturer's specifications in repair and replacement. (SLO 7.1)
5. Work safely and responsibly within all shop safety and environmental guidelines and standards. (SLO 6.4 & 6.5)
6. Rebuild and troubleshoot transmissions. (SLO 4.1 & 5.1)
7. Demonstrate ability to pass the ASE test required for NATEF certification. (SLO 1.1, 1.2 & 7.1)
8. Communicate and document service records. (SLO 2.1)
9. Compute costs, time and measurements. (SLO 2.1, 2.2 & 7.1)
10. Work independently and in groups to service, repair, test and maintain vehicles. (SLO 3.1 & 6.3)
11. Use technology to test vehicles. (SLO 5.1)
12. Work with accuracy, dependability, proficiency and in a timely manner, when servicing equipment. (SLO 6.3 & 6.4)

GENERAL COURSE OBJECTIVES:

At the end of the course the student will:

1. Explain and demonstrate safety as it applies to the automotive industry.
2. Demonstrate how to use both measuring and special manual transmission, transfer case and drive axle tools.
3. Define and explain power flow
4. Demonstrate how to diagnose and troubleshoot problems with manual transmissions, transfer cases and drive axles
5. Demonstrate how to disassemble, rebuild and reassemble a manual transmissions, transfer cases and drive axles
6. Demonstrate how to remove and install manual transmissions, transfer cases and drive axles
7. Demonstrate proficiency in NATEF competencies

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TOPICAL OUTLINE:	APPROX. HOURS
I. Safety practices	5
II. Principles of manual transmissions, transfer cases and drive axles	5
III. Trouble shoot and diagnose manual transmissions, transfer cases and drive axles	5
IV. Remove manual transmissions, transfer cases And drive axles	10
V. Overhaul manual transmissions, transfer cases And drive axles	15
VI. Install and road test manual transmissions, Transfer cases and drive axles	<u>10</u>
Total	50

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