DEPT: Automotive                  COURSE NO: AUTO 1136

COURSE TITLE: Engine Technology and Lab

CATALOG DESCRIPTION: Identify the basic operation, nomenclature and function of engines. Theory of engine cooling and lubrication systems will be explained and demonstrated. Students will inspect, repair, and/or adjust the following engine components and systems: valves, cylinder heads, blocks, crank shafts, cooling and lubrication systems.

4 Cr (1 lec. 3 lab, 0 other)

AUDIENCE: Auto students

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)

Area : by meeting the following competencies:

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PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: NA

LENGTH OF COURSE: 28 days @ 4 hours a day = 112 hours

THIS COURSE IS USUALLY OFFERED:

Every year X Every other year

Fall X Spring Summer Undetermined

Four goals are emphasized in course at Minnesota West Community & Technical College:
ACADEMIC CONTENT: Establish the fundamentals of internal combustion engine operation, repair, and maintenance, the procedures for removal, replacement, diagnosing, rebuilding, and assembly. Proper tool and equipment application and failure diagnosis are emphasized in this course. 4 credits (1 lecture, 3 lab) 112 hours

To learn the theory of operation of the engine.

To learn how to disassemble the engine properly.

To learn proper inspection of component parts for worn conditions.

To learn proper reassembly of the engine.

To do a complete engine rebuild from disassemble, inspection, reassemble, and running of the engine after doing all the test along the way.

THINKING SKILLS:

A. To use different situations to troubleshoot problems in fuel systems for best performance.

B. To be able to think through how fuel and engine performance work together.

C. To be able to troubleshoot engine operation and diagnose problem area.

D. To be able to think through how all of the internal parts of the fuel system work together.

COMMUNICATIONS SKILLS:

A. Participation in class discussion.

B. Complete written reports and assignments

C. To improve oral communications skills through class presentations.

HUMAN DIVERSITY:

A. To understand the roles of the technician in communicating with a diverse population.

B. To work effectively in teams comprised of diverse backgrounds.
C. To express personal philosophies on diverse issues.

**TOPICS TO BE COVERED:**

1. Piston engine operation.
2. Cooling and lubrication systems.
3. Engine problems.
4. Engine disassembly.
5. Engine inspection.
7. Engine reassembly.

**LIST OF EXPECTED COURSE OUTCOMES:**

After completing this course, the student should have the knowledge and application to:

1. Remove an engine from an automobile.
2. Disassemble, inspect and reassemble engine assembly.
3. Reinstall engine into an automobile.
4. Diagnosis basic engine problems.

5. The required outcomes follow the Auto Service Technician (AST) model of the National Automotive Technical Education Foundation (NATEF) certification program.

**LEARNING/TEACHING TECHNIQUES USED IN THIS COURSE:**

X Collaborative Learning X Problem Solving

Student Presentations X Interactive Lectures

Creative Projects Individual Coaching
EXPECTED STUDENT LEARNING OUTCOMES:

After completing this class, students should be able to:

1. Remove an engine from an automobile.

2. Disassemble, inspect and reassemble engine assembly.

3. Reinstall an engine into an automobile.

4. Diagnosis basic engine problems.

This course outline was developed from standards established by the National Technicians Education Foundation (NATEF), January 2008. The complete NATEF task list for A-1 (Engine Repair) is provided in the following information. The instructor has chosen selected tasks (indicated by ***) to best suit this class. Successful completion of this class will include satisfactorily completing at least 26 of the P-1 tasks, at least 18 of the P-2 tasks, and at least 5 of the P-3 tasks. Task completion is documented by the instructor and calculated into the course grade. It must be understood, that the student is will not pass this class without completing each of the marked (*** tasks).
"This course will cover the characteristics of hazardous wastes and its safe handling, storage, and disposal."

**Veteran Services:** Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or Minnesota Relay Service at 800-627-3529 or by using your preferred relay service.

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