MASTER COURSE OUTLINE
Prepared By: John Martin Date: September 2017

COURSE TITLE
Automotive Engine Service

GENERAL COURSE INFORMATION

Dept.: AUT	Course Num: 111	(Formerly:)
CIP Code: 47.0604	Intent Code: 21	Program Code: 712
Credits: 9		
Total Contact Hrs Per Qtr.: 132		
Lecture Hrs: 66	Lab Hrs: 66	Other Hrs:
Distribution Designation:		

COURSE DESCRIPTION (as it will appear in the catalog)
This course covers the theory of engine operation and the procedures necessary to perform automobile engine troubleshooting, repair and rebuilding. Topics covered include shop skills, engine operation, engine blocks, engine crankshafts, engine bearings, engine pistons, rings and valve system service. This course is designed to prepare the student for the ASE/NATEF Engine Repair Certification test, while instilling interpersonal and employability skills. There will be a heavy focus on customer service and quality control.

PREREQUISITES
AUT 115 Automotive Shop Safety and Environmental Issues
Co-Requisite: AUT 190 Automotive Lab

TEXTBOOK GUIDELINES
An automotive engine service and repair text as chosen by Automotive Faculty (Example: *Automotive Engines Theory and Servicing 8th Edition – Halderman)*

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:
1. Demonstrate awareness of safety and environmental issues in the automotive lab area.
2. Describe the basic theory, purpose, and operation of an automotive engine as parts of a system.
3. Utilize and interpret automotive technical information from online sources, such as ALLDATA.
4. Select and use the proper specialty tools required for specific automotive engine repairs.
5. Demonstrate ability to diagnose engine malfunctions using diagnostic tools and critical thinking skills.
6. Demonstrate the ability to perform various engine repairs without removing the engine.
7. Demonstrate the ability to remove and reinstall an automobile engine.
8. Demonstrate the ability to disassemble, inspect, clean and reassemble an automotive engine.
9. Participate in small-group discussions with people of different backgrounds and personalities.
10. Demonstrate punctuality, curtesy, and basic integrity in the work place.
11. Demonstrate effective customer service skills and problem resolution.

INSTITUTIONAL OUTCOMES

COURSE CONTENT OUTLINE

UNIT 1: INTRODUCTION TO AUTOMOTIVE REPAIR

- Employability Skills
- Working with People
- Automotive Tools
- Fasteners and Thread Repair
- Vehicle Types
- Service Information and Vehicle ID

UNIT 2: FOUR STROKE THEORY AND OPERATION

- Four Stroke Engine Operation
- Conventional and Alternative Fuels
- Engine Fluid Systems
- Intake and Exhaust Systems

UNIT 3: GASOLINE ENGINE ASSEMBLY

- Engine Cylinder Block and Parts
- Engine Cylinder Head and Parts
- Gaskets, Sealers, and Cleaning Methods
- Engine Removal and Disassembly
- Engine Reassembly, Installation, and Break-In

UNIT 4: MODERN ENGINE SYSTEMS

- Throttle-by-Wire
- Cylinder Cancel
- Variable Valve Timing, Lift, and Duration
- Gasoline Direct Injection
- Variable Vane Turbo Chargers

UNIT 5: ENGINE DIAGNOSIS AND SERVICE

- Minor Mechanical Malfunction and Repair
- Major Mechanical Malfunction and Repair
- Peripheral Component Malfunction and Repair
- Electronic Component Malfunction and Symptoms

DEPARTMENTAL GUIDELINES *(optional)*

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DIVISION CHAIR APPROVAL **DATE**