COURSE PLAN

FIRST: AUTOMOTIVE ENGINEERING

College

College : Faculty of Engineering Technology

Department : Mechanical Engineering Department

Course

Course Title : Automobile Diagnosis, Maintenance and Repair

Course Code : 020201253

Credit Hours : 3 (3 Theoretical, 0 Practical)

Prerequisite : 020201221+020300101

Instructor

Name :

Office No. :

Tel (Ext) :

E-mail

Office Hours :

Class Times

Building	Building	Building	Building	Building
00	00	00	00	00

Text Book

Title :

- Advanced Automotive Fault Diagnosis, Advanced Automotive Fault Diagnosis, Tom Denton.
- Auto Diagnosis Service Repair Hard Cover Textbook Automotive ASE Training NEW

References

1. Auto Repair and Maintenance (Easy Lessons for Maintaining Your Car So It, Lasts Longer) by Dave Stripling
2. Bosch Automotive Handbook, 10th Edition BOSCH10

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course specifies a knowledge of automobile troubleshooting, troubleshooting equipment, service procedure and adjustments, diagnosis of automobile systems.
It includes diagnosis, maintenance, repair and adjustments of engine, brake system, steering and suspension systems, instrumentation panel and planning in maintenance and repair, environmental protection during automobile maintenance. And it also covers the knowledge of body painting (painting plan, damaged film removal, primer, putty, surface, masking, blend paint etc.).

COURSE OBJECTIVES

The objective of this course is to enable the student to do the following:

- Explain the principles of automobile troubleshooting and troubleshooting equipment, maintenance and repair types.
- Explain service procedure and adjustments.

- Explain the principles of Diagnosis, maintenance, repair and adjustments of engine systems, brake system, steering and suspension systems, instrumentation panel.
- Explain the principles of instruments and equipment used in maintenance and repair.
- Explain planning in maintenance and repair.
- Explain principles of body painting (painting plan, damaged film removal, primer, putty, surface, masking, blend paint etc.).

COURSE LEARNING OUTCOMES

By the end of the course, the students will be able to:

CLO1. Explain the basics of automotive diagnosis and the procedures to check out failures
CLO2. Explain the diagnosis and maintenance of engine systems
CLO3. Explain the diagnosis and maintenance of transmissions and transaxles
CLO4. Explain the drive line maintenance
CLO5. Explain the steering system maintenance
CLO6. Explain the suspension system maintenance
CLO7. Explain the wheel alignment
CLO8. Explain the instrumentation panel
CLO9. Explain the basics of body painting

COURSE SYLLABUS

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
1	Introduction	• Diagnostic Process. a) Six Stages of Diagnosis. • Vehicle diagnostic and maintenance starter components. • Types of vehicle maintenance safety. • Introduction of procedures to check failures: a) Listen to failure status. b) Check vehicle abnormality state. c) Checking failure part. d) Recording failure.	CLO1	
2	Diagnosis and Maintenance of Engine systems -1	• Cooling System. a) Main component b) Radiator c) Water pump d) Thermostat, etc. • Lubricating System. a) Oil Pump. b) Oil Filter. c) Feed and return Lines.	CLO2	
3	Diagnosis and Maintenance of Engine systems -2	• Ignition System. a) Ignition Coils. b) Electronic Ignition System. c) Spark Plugs.	CLO2	

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
4	Diagnosis and Maintenance of Engine systems -3	• Fuel System. a) Fuel Tank. b) Fuel Lines. c) Fuel Rail. d) Injectors. e) Fuel Pressure Regulator. f) Fuel Pumps.	CLO2	
5	Diagnosis and Maintenance of Transmissions and Transaxles -1	• Clutches. a) Clutch Components. b) Adjustment. • Manual Transmissions. a) Components. b) Adjustment. • Transaxles. a) Front wheel Transaxles main components.	CLO3	
6	Diagnosis and Maintenance of Transmission and Transaxles -2	• Automatic Transmission. a) Main Components. b) Principles of Operation. c) Gears. d) Valves. e) Solenoids. f) Torque Converter.	CLO3	
7	Drive line maintenance	• Front wheel drive • Rear wheel drive • 4-wheel drive • Components of the Differential. • Differential Adjustment. • Axis. • Bearings.	CLO4	
8	**Mid Exam**			
9	Steering System Maintenance	• Type of steering systems. • Manual steering system. • Hydraulic steering system. • Electric Steering system. • Diagnosis and Maintenance of Steering systems.	CLO5	
10	Suspension System Maintenance	• Types of Vehicles Suspension Systems. • Suspension Systems Components. • Electronic Suspension system. • Diagnostics of the Suspension systems.	CLO5	
11	Brake System Maintenance	• Components and Operation of a hydraulic brake system (brake lines and hoses, master cylinders,	CLO6	

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
		system control valves, and safety switches). • Drum and Disc brakes. • Hydraulic Brake Booster. • Anti-Lock Brake System (ABS). a) Components and Operation of ABS.		
12	Wheel Alignment	• Alignment Geometry a) Caster. b) Camber. c) Toe. d) King Pin. e) Turning Angle. • Tracking and Thrust Angle. • Performing an Alignment using spatial equipment.	CLO7	
13	Instrumentation Panel	• Types of instrument panel display. • Gauges: magnetic, thermal. • Speedometers. • Odometer. • Oil Pressure Gauge. • Any other gauges.	CLO8	
14	Body Painting -1	• Painting Plan • Damaged film removal • Primer	CLO9	
15	Body Painting -2	• Putty • Surface • Masking • Blend Paint • Color Preparation	CLO9	
16	**Final Exam**			

COURSE LEARNING RESOURCES

The effectiveness of teaching in this course depends on making students familiar with the basics of diagnosis, maintenance, and repair of automotive systems, such as engine, brake system, steering and suspension systems, instrumentation panel, maintenance and repair types, automobile repair technology, instruments and equipment used in maintenance and repair, spare parts planning in maintenance and repair, environmental protection during automobile maintenance, body painting (painting plan, damaged film removal, primer, putty, surface, masking, blend paint etc.).

Teaching methods:

1. Lectures and HomeWorks: using PowerPoint for, example, by the teacher to provide the students with the all information that they need, and to give them a home work as a research method or/and report.

2. Online research skills, watching related videos such as you tube, on topics related to course objectives and recent developments in the field of specific work.
3. Learning skills and adaptability: Developed by transferring students and reconfiguring work teams to enable them to adapt to other individuals from time to time.

ONLINE RESOURCES

https://transportation.wv.gov/highways/training/TrainingDocuments/

ASSESSMANT TOOLS

(Write assessment tools that will be used to test students ability to understand the course material and gain the skills and competencies stated in learning outcomes

ASSESSMENT TOOLS	%
Quizzes	10
Researches and Reports	
Participation	
Oral Exams	
Activities/attendance	
Presentation	10
Mid Exam	30
Final Exam	50
TOTAL MARKS	100

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 20% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

GRADING SYSTEM
Example:

0 – 49 Fail
50 – 100 Pass

REMARKS

{The instructor can add any comments and directives such as the attendance policy and topics related to ethics}

COURSE COORDINATOR

Course Coordinator	**Department Head:**
Signature:	**Signature:**

Date:	Date: