

## COURSE PLAN

### FIRST: AUTOMOTIVE ENGINEERING

#### College

College : Faculty of Engineering Technology

Department : Mechanical Engineering Department

#### Course

Course Title : Automobile Diagnosis, Maintenance and Repair Workshops 1

Course Code : 020201255

Credit Hours : 2 (0 Theoretical, 2 Practical)

Prerequisite : 020201253

#### Instructor

Name : Dr. Suleiman Qasim Abu-Ein

Office No. :

Tel (Ext) :

E-mail : suleimanabuein@bau.edu.jo

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

### SECOND: PROFESSIONAL INFORMATION

#### COURSE DESCRIPTION

This course specifies a practical knowledge of basic principles of workshop safety and instructions and diagnosis, maintenance and repair of engine system, cooling, lubricating, ignition and fuel systems, suspension, steering and braking systems.

#### COURSE OBJECTIVES

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

- Explain a personal safety in workshop.
- Develop working competence of automobile troubleshooting and troubleshooting equipment, maintenance and repair types.

**COURSE LEARNING OUTCOMES**

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

- CLO1. Apply the basic safety requirements at workshops  
 CLO2. Diagnose and repair engine systems: cooling, lubricating, ignition, and fuel systems  
 CLO3. Diagnose and repair the engine parts  
 CLO4. Disassemble, change, and assemble the brake systems: Disc and Drum  
 CLO5. Diagnose and repair the Anti-Lock Braking System (ABS)  
 CLO6. Diagnose and repair the steering systems  
 CLO7. Diagnose and repair the suspension systems

**COURSE SYLLABUS**

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
1	Training Safety	<ul style="list-style-type: none"> <li>• Personal safety.</li> <li>• Tools safety.</li> <li>• Universal hand tools.</li> <li>• Special tools.</li> </ul>	CLO1	
2	Engine Systems -1	<ul style="list-style-type: none"> <li>• Diagnosis, Removing, Repair, and Installing of Cooling System components:               <ol style="list-style-type: none"> <li>a) Water Pump.</li> <li>b) Radiator and Hoses.</li> <li>c) Thermostat.</li> <li>d) Cooling Fan.</li> <li>e) Coolant and Antifreeze.</li> </ol> </li> </ul>	CLO2	
3	Engine Systems -2	<ul style="list-style-type: none"> <li>• Diagnosis, Removing, Repair, and Installing of Lubricating System:               <ol style="list-style-type: none"> <li>a) Oil Pump.</li> <li>b) Oil Filter.</li> <li>c) Oil Pan (Carter).</li> <li>d) Oil Pressure Indicator.</li> <li>e) Oil Level Indicator.</li> </ol> </li> </ul>	CLO2	
4	Engine Systems -3	<ul style="list-style-type: none"> <li>• Diagnosis, Removing, Repair, and Installing of Ignition System:               <ol style="list-style-type: none"> <li>a) Basic Circuitry.</li> <li>b) Ignition Coils.</li> <li>c) Ignition Cables.</li> <li>d) Spark Plugs.</li> <li>e) Triggering and Switching Devices.</li> </ol> </li> </ul>	CLO2	
5	Engine Systems -4	<ul style="list-style-type: none"> <li>• Diagnosis, Removing, Repair, and Installing of Fuel System:               <ol style="list-style-type: none"> <li>a) Fuel Tank.</li> <li>b) Fuel Pump.</li> <li>c) Fuel Lines.</li> <li>d) Fuel Pressure Regulator.</li> <li>e) Fuel Rail.</li> <li>f) Fuel Injectors.</li> <li>g) Voltage Signals.</li> </ol> </li> </ul>	CLO2	

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
6	Engine Parts -1	<ul style="list-style-type: none"> <li>• Diagnosis, Removing, Repair, and Installing of:               <ol style="list-style-type: none"> <li>a) Cylinder Block.</li> <li>b) Cylinder Head.</li> <li>c) Camshaft.</li> <li>d) Valves.</li> <li>e) Variable Valve Timing Intelligence (VVTi).</li> </ol> </li> </ul>	CLO3	
7	Engine Parts -1	<ul style="list-style-type: none"> <li>• Diagnosis, Removing, Repair, and Installing of:               <ol style="list-style-type: none"> <li>a) Crankshaft and its Components.</li> <li>b) Pistons.</li> <li>c) Connecting Rods.</li> </ol> </li> </ul>	CLO3	
8	<b>Mid Exam</b>			
9	Brake Systems-1	<ul style="list-style-type: none"> <li>• Hydraulic Brake System               <ol style="list-style-type: none"> <li>a) Master Cylinder Inspection.</li> <li>b) Brake Fluid Inspection.</li> <li>c) Brake line and Hoses Inspection.</li> <li>d) Hydraulic Bleeding.</li> <li>e) Parking Brake Switch inspection.</li> <li>f) Stop Lamp Inspection.</li> <li>g) Brake Pedal Inspection and Adjustment.</li> </ol> </li> </ul>	CLO4	Practice report
10	Brake Systems-2	<ul style="list-style-type: none"> <li>• Drum Brakes               <ol style="list-style-type: none"> <li>a) Inspection Drum Brakes.</li> <li>b) Brake Shoes Inspection.</li> <li>c) Removing, Repair and Installing Brake Shoes.</li> <li>d) Inspection and Replacing Wheel Cylinder.</li> <li>e) Installing Wheel Cylinder.</li> <li>f) Inspection Parking Brakes.</li> <li>g) Adjusting Parking Brakes.</li> </ol> </li> </ul>	CLO4	Practice report
11	Brake Systems-3	<ul style="list-style-type: none"> <li>• Disc Brakes               <ol style="list-style-type: none"> <li>a) Inspection Disc Brakes.</li> <li>b) Inspection and Remove Calipers.</li> <li>c) Brake Pads Removal.</li> <li>d) Brake Pads Installation.</li> <li>e) Brake Pedal Inspection and Adjusting.</li> <li>f) Inspection and Remove a Rotor.</li> <li>g) Installing a Rotor.</li> </ol> </li> </ul>	CLO4	Practice report
12	Anti-Lock Brake System (ABS)	<ul style="list-style-type: none"> <li>• Testing Components of ABS with Scan Tools.</li> <li>• Wheel Speed Sensors Inspection.</li> <li>• Wheel Speed Sensors Removal and Installation.</li> <li>• Brake System Bleeding.</li> </ul>	CLO5	Practice report

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
		<ul style="list-style-type: none"> <li>• Inspection Master Cylinder Fluid Level.</li> <li>• Inspection Warning Lamps.</li> </ul>		
13	Steering Systems	<ul style="list-style-type: none"> <li>• Inspection of the Rake and Pinion Steering Linkage Components.</li> <li>• Steering Wheel Inspection.</li> <li>• Steering Column Inspection.</li> <li>• Inspection of Electric Power Steering Components.</li> </ul>	CLO6	Practice report
14	Suspension Systems -1	<ul style="list-style-type: none"> <li>• Inspection, Removing Different types of Suspension's Systems Components using special Tools:               <ol style="list-style-type: none"> <li>a) Springs.</li> <li>b) Shock Absorbers.</li> <li>c) Stabilizer Bars.</li> <li>d) Bushings.</li> <li>e) Struts.</li> </ol> </li> </ul>	CLO7	Practice report
15	Suspension Systems -2	<ul style="list-style-type: none"> <li>• Installing Suspension's Systems Components.</li> <li>• Inspection, Remove Ball Joints.</li> <li>• Installing Ball Joints.</li> <li>• Check Suspension Components for Noise.</li> </ul>	CLO7	
16	<b>Final Exam</b>			

### COURSE LEARNING RESOURCES

The effectiveness of teaching in this course depends on making students familiar with the basic practical skills of inspection, removing and installing of different systems such as: cooling, lubricating, ignition and fuel systems, engine parts: timing belt, crankshaft, pistons and cylinders, suspension, steering and braking systems.

#### Teaching methods:

- Exercising and practicing: by training students to do all the practical works using the right instrument and to identify the type of exercise.
- 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.
- 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

[www.youtube.com](http://www.youtube.com)

### 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	
Researches and Reports	20
Participation	
Oral Exams	
Activities/attendance	
Presentation	
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:  
Signature:  
Date:

Department Head:  
Signature:  
Date: