

Module (Course Syllabus) Catalogue 2021-2022

College/ Institute	Erbil Technology Institute	
Department	Automotive Technology	
Module Name	ENGINE PERFORMANCE 2	
Module Code	ENP402	
Degree	Technical Diploma <input type="checkbox"/>	Bachelor <input checked="" type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	4	
Qualification	Master	
Scientific Title	Lecturer	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/>	Core <input checked="" type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours		
Weekly hours (Theory)	(1)hr Class	(51)Total hrs Workload
Weekly hours (Practical)	(2)hr Class	(72)Total hrs Workload
Number of Weeks	14	
Lecturer (Theory)	Ahmed Ibraheem rahhem	
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Lecturer (Practical)	Zala , rzgar anwer. Amanj	
E-Mail & Mobile NO.		
Websites		

Course Book

Course Description	This course covers the introduction, theory of operation, and basic diagnostic procedures required to restore engine performance to today's vehicles equipped with complex engine control systems. Topics include an overview of engine operation, ignition components and systems, fuel delivery, injection components and systems and emission control devices and emerging engine performance technologies. Upon completion students should be able to describe operation of and diagnose/repair basic ignition, fuel and emission related driveability problems using appropriate test equipment and service information.				
Course objectives	<p>Upon Completion of this course the student will be able to:</p> <ol style="list-style-type: none"> 1. Identify engine type and engine management systems. 2. Utilize technical specifications and troubleshooting procedures. 3. Analyze and test engine mechanical soundness. 4. Diagnose and repair vacuum leaks. 5. Diagnose electrical/electronics system problems and make necessary repairs. 6. Perform no starting and hard starting diagnostic procedures. 				
Student's obligation	The student must attendance the hall 1 hour and 2 hour in shop abidance the lecturer instruction wherein early attendance and bringing requisite tools and keep the hall clean and protect furniture.				
Required Learning Materials	To avoid student bared in the hall lecturer uses several tools, whiteboard, data show and other demonstrate tools to interest student.				
Evaluation	Task		Weight (Marks)	Due Week	Relevant Learning Outcome
	Paper Review				
	Assignments	Homework	10%	4	
		Class Activity	2%		
		Report	14%	1	
		Seminar	14%	1	
		Essay			
		Project			
	Quiz		4%	5	
	Lab.		14%		
	Midterm Exam		16%		
	Final Exam		40%		
Total		60%			

Specific learning outcome:	<p>Upon the completion of this course students will be able to complete the following:</p> <ol style="list-style-type: none"> 1. Restore engine performance to reduce pollution contributing to environment concerns. 2. Identify and diagnosis ignition control components and systems for their integrity. 3. Identify and diagnosis fuel delivery components and systems for their integrity. 4. Diagnosis and repair ignition, fuel, and emissions related drivability concerns using the appropriate testing equipment. 5. Research and validate service information and specification charts. 6. Measure and calculate data provided by engine performance test equipment to correct deficiencies found. 7. 	
Course References:	<ol style="list-style-type: none"> 1. Auto Engine Performance 2. Internet 	
Course topics (Theory)	Week	Learning Outcome
General Engine Operation (Overview/Review)	1	1
Engine Systems (Overview of Basic Operation and Purpose)	2	1
Fuels and Fuel Systems	3	2
Ignition Systems	4	2,3
Emission Control Systems	5	2,3
The Diagnostic Process	6	1
Midterm Examination	7	
Midterm Examination	8	
Collect Service Information and Check TSB's	9	5
Scan Tool Introduction	10	4
Data Streams (scan tool data)	11	6
OBD II On-Board Diagnostics (Gen II)	12	1
General "Mechanical" Condition	13	3
Cylinder Leakage Test	14	4
Practical Topics	Week	Learning Outcome

1. Fuels a. Gasoline b. Diesel c. Alcohol and Blends d. CNG, LPG e. Hydrogen f. Others	1	1
2. Fuel Injection a. Multi-port b. Throttle Body 3. Delivery	2	1
1. "DI" Distributor Ignition 2. "EI" Distributorless Ignition 3. "COP" Coil On Plug	3	2
1. PCV Positive Crankcase Ventilation 2. EGR Exhaust Gas Recirculation 3. EVAP Evaporative Control Systems	4	2
4. AIR Injection Systems 5. Catalytic Converter Systems	5	2
A. Verify the Problem B. Gather Customer Information and Vehicle History B Visual Inspection and Basic Tests C. Retrieve and Record DTC's	6	2
E. Scan Tool Data F. Identify the Problem Cylinder or System G. Repair Problem and Determine Root Cause H. Verify Repair and Clear Codes	7	4
Diagnostic Trouble Codes 1. Retrieval 2. Clearing	8	3
OBD I On-Board Diagnostics (Gen I) 1. History 2. System(s) Overview	9	2
OBD II On-Board Diagnostics (Gen II) 1. History 2. System(s) Overview	10	3
Compression Tests 1. Dry 2. Wet 3. Running	11	1
Vacuum Gauge Tests D. Power Balance	12	4

Questions Example Design

Compositional:

- A. List of the Fuel Delivery System
B. find displacement of V-8 truck engine having cylinder diameter (bore) of 6 inches and a piston travel (stroke) of 4.22 inches.
- 2. True or false type of exams:**
1. A multiport fuel injection system has three fuel injectors per cylinder.
 2. In a coil-on-plug (COP) ignition system, the coil assembly is directly mounted on the spark plug.

3. Multiple choices:

1. All of the following are examples of fixed memory, except:

(A) RAM. (B) ROM. (C) PROM. (D) FEPRM.

2. Some throttle position sensors are _____.

(A) variable resistors (B) transducers (C) adjustable (D) All of the above.

Extra notes:

Student must be any time ready for quizzes.

External Evaluator

I have read the terms of this article and acknowledge that it meets the required purpose.

Ahmeed Ibrahim Raheem

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