

COURSE PLAN

FIRST: AUTOMOTIVE ENGINEERING

College

College : Faculty of Engineering Technology

Department : Mechanical Engineering Department

Course

Course Title : Automobile Electrical and Electronic Systems Workshops 2

Course Code : 020201268

Credit Hours : 1 (0 Theoretical, 1 Practical)

Prerequisite : 020201261*

Instructor

Name : Dr. Suleiman Qasim Abu-Ein

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Tel (Ext) :

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Office Hours :

Class Times

Building	Building	Building	Building	Building
00	00	00	00	00

Text Book

- Title :
- AUTOMOTIVE TECHNOLOGY A SYSTEMS APPROACH, Jack Erjavec (6th edition)
 - How to Diagnose and Repair Automotive Electrical Systems (Motorbooks Workshop), Tracy Martin
 - Automobile Electrical and Electronic Systems, Tom Denton
 - How to Do Electrical Systems: Most Everything About Auto Electrics, Skip Readio

References

1. Automobile Electrical and Electronic Systems essential theory and practice, Tony Tranter

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course specifies a practical knowledge of disassembly, check and assembly of sensors, actuators using the scanning tools in automotive.

It includes position/speed sensor, crankshaft position sensor, camshaft position sensor, air flow sensor, MAP sensor, engine coolant temperature sensor, throttle position sensor, temperature sensors, O2 sensors, knock sensor, sensors applications. And it also includes the system like transistors, actuators, fuel injectors, Idle speed control and ABS actuators.

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 diagnosis, disassembly and assembly of input devices

- Develop working competence of diagnosis of system outputs (Actuators).
- Develop working competence of diagnosis of CAN bus system.
- Develop working competence of using the Scan Tools.

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 input devices (Sensors)
 CLO3. Diagnose and repair system outputs (Actuators)
 CLO4. Diagnose and follow the basics of CAN BUS systems
 CLO5. Use the scan tools for overall diagnosis

COURSE SYLLABUS

Week	Topic	Topic Details	Reference (Chapter)	Proposed Assignments
1	Safety Training	<ul style="list-style-type: none"> • Personal safety. • Tools safety. • Universal hand tools. • Special tools. • Fundamentals Dedicated scanners or general-purpose of diagnostic devices. 	CLO1	
2	Input Devices -1	<ul style="list-style-type: none"> • Diagnosis and Testing of: <ol style="list-style-type: none"> a) Position / Speed Sensors. b) Crankshaft Position sensor. c) Using the Scan Tool. 	CLO2	Practice report
3	Input Devices -2	<ul style="list-style-type: none"> • Diagnosis and Testing of: <ol style="list-style-type: none"> a) Camshaft position sensor. b) Using the Scan Tool. 	CLO2	
4	Input Devices -3	<ul style="list-style-type: none"> • Diagnosis and Testing of: <ol style="list-style-type: none"> a) Air Flow Sensor, b) M A P Sensor c) Using the Scan Tool. 	CLO2	
5	Input Devices -4	<ul style="list-style-type: none"> • Diagnosis and Testing of: <ol style="list-style-type: none"> a) Engine coolant temperature. b) Using Scan Tool. 	CLO2	
6	Input Devices -5	<ul style="list-style-type: none"> • Diagnosis and Testing of: <ol style="list-style-type: none"> a) Knock Sensor b) Sensors applications. c) Using the Scan Tool. 	CLO2	
7	Input Devices -6	<ul style="list-style-type: none"> • Diagnosis and Testing of: <ol style="list-style-type: none"> a) Throttle Position Sensor. b) O2- sensors. c) Any other sensors. d) Using Scan Tool. 	CLO2	Practice report
8	Mid Exam			
9	System outputs (Actuators) -1	<ul style="list-style-type: none"> • Check the Transistors. • Check Diodes. • Recognize the Output Devices. 	CLO3	

Week	Topic	Topic Details	Reference (Chapter)	Proposed Assignments
10	System outputs (Actuators) -2	<ul style="list-style-type: none"> Recognize the Idle Speed Components. Check Idle Speed for Faults. Remove Idle Speed components. Install Idle Speed components. 	CLO3	
11	System outputs (Actuators) -3	<ul style="list-style-type: none"> Check and test ABS actuators. Remove ABS actuators. Install ABS actuators. 	CLO3	
12	System outputs (Actuators) -4	<ul style="list-style-type: none"> Inspect Air-conditioning Actuators. Remove Air-conditioning Actuators. Install Air-conditioning Actuators. 	CLO3	
13	System outputs (Actuators) -5	<ul style="list-style-type: none"> Inspect Fuel Injectors using Ohmmeter or other measuring devices. Remove Fuel Injectors. Install Fuel Injectors. 	CLO3	
14	CAN BUS	<ul style="list-style-type: none"> Inspect the Bus wires. Perform the communications in the Bus system. 	CLO4	Practice report
15	Scan Tools	<ul style="list-style-type: none"> Use the Scan Tool to perform general test for all components. Check out the Trouble Codes. Perform an Active Test. 	CLO5	Practice report
16	Final Exam			

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: automotive input devices (Sensors), System outputs (Actuators), CAN BUS system, and Scan Tools.

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.autoshop101.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	10
Participation	
Oral Exams	10
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: Dr. Suleiman Abu-Ein
Signature:
Date:

Department Head:
Signature:
Date: