

## COURSE PLAN

### FIRST: AUTOMOTIVE ENGINEERING

#### College

College : Faculty of Engineering Technology

Department : Mechanical Engineering Department

#### Course

Course Title : Automobile Electrical and Electronic Systems Workshops1

Course Code : 020201263

Credit Hours : 1 (0 Theoretical, 1 Practical)

Prerequisite : 020201261\*

#### Instructor

Name : Dr. Suleiman Qasim Abu-Ein

Office No. :

Tel (Ext) :

E-mail : [suleimanabuein@bau.edu.jo](mailto:suleimanabuein@bau.edu.jo)

Office Hours :

Class Times

Building	Day	Start Time	End Time	Room No.
00	00	00	00	00

#### Text Book

- Title : AUTOMOTIVE TECHNOLOGY A SYSTEMS APPROACH, Jack Erjavec (6<sup>th</sup> 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 knowledge of basic principles of disassembly, check and assembly of automotive batteries. It also covers the diagnosis and maintenance of lighting, ignition, and fuel systems, lights, safety, and signaling and driver information and control devices and using scan tools.

#### 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 disassemble, check and assemble the automotive battery.
- Develop working competence of disassemble of lighting system, ignition system, fuel system, lights and safety and signaling.
- Explain and demonstrate a basic knowledge of driver information.

**COURSE LEARNING OUTCOMES**

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

- CLO1 **Apply** the basic safety requirements at workshops  
 CLO2. **Perform** the basics of **automotive batteries** service  
 CLO3. **Diagnose** and repair **lighting systems**  
 CLO4. **Diagnose** and repair the **ignition systems**  
 CLO5. **Diagnose** and repair the **fuel injection systems**  
 CLO6. **Diagnose** and repair the basics of **lights, safety, signaling**, driver information and control devices

**COURSE SYLLABUS**

Week	Topic	Topic Details	Reference (Chapter)	Proposed Assignments
1	Safety Training	<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	The Automotive Batteries -1	<ul style="list-style-type: none"> <li>• Diagnosis and Inspection.</li> <li>• Check battery state of charge.</li> </ul>	CLO2	
3	The Automotive Batteries -2	<ul style="list-style-type: none"> <li>• Check specific of gravity.</li> <li>• Open Circuit Test.</li> <li>• Heavy Load Test.</li> </ul>	CLO2	Practice report
4	Lighting Systems -1	<ul style="list-style-type: none"> <li>• Headlight Replacement.</li> <li>• High Intensity Discharge Diagnosis and Service.</li> <li>• Replacing all Lamps and bulbs.</li> </ul>	CLO3	
5	Lighting Systems -2	<ul style="list-style-type: none"> <li>• Headlight Adjustments.</li> <li>• Diagnosis of Auto-Leveling Headlamps using Special Tools.</li> <li>• Recognize and Check Lighting System Circuits.</li> </ul>	CLO3	Practice report
6	Ignition Systems -1	<ul style="list-style-type: none"> <li>• Perform a no-start diagnosis and determine the cause of the condition.</li> <li>• Determine the cause of an engine misfire.</li> </ul>	CLO4	
7	Ignition Systems -2	<ul style="list-style-type: none"> <li>• Perform a visual inspection of ignition system components, primary wiring, and secondary wiring to locate obvious trouble areas.</li> <li>• Test the components of the primary and secondary ignition circuits.</li> <li>• Test individual ignition components using test equipment such as a voltmeter, ohm meter, and test light.</li> </ul>	CLO4	Practice report
8	<b>Mid Exam</b>			

Week	Topic	Topic Details	Reference (Chapter)	Proposed Assignments
9	Ignition Systems -3	<ul style="list-style-type: none"> <li>• Service and install spark plugs.</li> <li>• Describe the effects of incorrect ignition timing.</li> <li>• Check and set (when possible) ignition timing.</li> <li>• Inspection and service Ignition coils.</li> </ul>	CLO4	Practice report
10	Electronic Fuel Injection -1	<ul style="list-style-type: none"> <li>• Perform a preliminary diagnostic procedure on a fuel injection system.</li> <li>• Remove, clean, inspect, and install throttle body assemblies.</li> <li>• Inspect the fuel pressure regulator in a TBI, MFI, or SFI.</li> </ul>	CLO5	
11	Electronic Fuel Injection -2	<ul style="list-style-type: none"> <li>• Determine injectors condition.</li> <li>• Perform an injector sound, ohmmeter, light, and scope test.</li> <li>• Remove and replace the fuel rail, injectors, and pressure regulator.</li> </ul>	CLO5	Practice report
12	Electronic Fuel Injection -3	<ul style="list-style-type: none"> <li>• Check the components of a GDI system.</li> <li>• Diagnose causes of improper idle speed.</li> </ul>	CLO5	
13	Electronic Fuel Injection -4	<ul style="list-style-type: none"> <li>• Inspect Air Induction system</li> <li>• Inspection the fuel tank.</li> <li>• Check Fuel System's related sensors.</li> </ul>	CLO5	Practice report
14	Lights, Safety, and signaling and driver information and control devices -1	<ul style="list-style-type: none"> <li>• Inspect Safety and signaling Systems</li> <li>• Check Driver information components.</li> <li>• Inspect Control Devices (fuel level, windshield wipers, etc.).</li> <li>• Check Instrument panel for any problems.</li> <li>• Check the Horn and horn relay.</li> <li>• Inspect Seat belts</li> </ul>	CLO6	Practice report
15	Lights, Safety, and signaling and driver information and control devices -2	<ul style="list-style-type: none"> <li>• Check Air bags circuit and condition.</li> <li>• Inspect Wind shield wiper and washers.</li> <li>• Speedometer and odometer.</li> <li>• Other electronic and electronic devices.</li> </ul>	CLO6	Practice report
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: automotive batteries, lighting, ignition, and fuel systems. Diagnosis and maintenance of Lights, Safety, and signaling and driver information and control devices.

#### 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](http://www.autoshop101.com)

#### ASSESSMENT 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:**