COURSE PLAN

FIRST: AUTOMOTIVE ENGINEERING

College	
College	Faculty of Engineering Technology
Department	Mechanical Engineering
Course	
Course Title	Automotive Engineering Workshop
Course Code	020201222
Credit Hours	2 (0 Theoretical, 2 Practical)
Prerequisite	*020201221
Instructor	
Name	Dr. Waleed Momani
Office No.	199
Tel (Ext)	199
Email	Momani.w@bau.edu.jo
Office Hours	
Class Times	

Building	Day	Start Time	End Time	Room

Text Book

Title : Automotive Technology. A Systems Approach, 5th Edition By Jack Erjavec, Printed in the United States of America 1 2 3 4 5 XX 12 11 10 09, 2010

References

1. Judge.A.W. Mechanism of the car, Chapman and Halls Ltd., London1986.
2. Giles. J. G, Steering Suspension and tires, IIIiffe Book Co., London, 1988.
3. AUTOMOTIVE TECHNOLOGY A SYSTEMS APPROACH Jack Erjavec

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course specifies a workshop knowledge of engine systems, Transmission unit [transmission, transaxle (manual and automatic), drive shaft, joints, final drive, differential and axles], suspension system, steering system, wheel alignment, braking systems

COURSE OBJECTIVES

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

Explain how to disassemble, assemble engine system, lubricating system and cooling system.

Explain how to disassemble, check and assemble transmission system and drive axles and differentials.

Explain how to disassemble, check and assemble suspension system, tires, wheels, wheel alignment and steering system

Explain how to disassemble, check and assemble Automotive electric and electronic systems

COURSE LEARNING OUTCOMES

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

CLO1. Disassemble and assemble engine system.
CLO2. Disassemble, inspect and assemble lubricating system and cooling system
CLO3. Disassemble, inspect and assemble transmission system
CLO4. Disassemble, inspect and assemble drive axles and differentials
CLO5. Disassemble, inspect and assemble suspension system.
CLO6. Disassemble, inspect and assemble tires and wheels
CLO7. Disassemble, inspect and assemble wheel alignment
CLO8. Disassemble, inspect and assemble automotive brake system
CLO9. Disassemble, inspect and assemble steering system
CLO10. Disassemble, inspect and assemble automotive electric and electronic systems

COURSE SYLLABUS

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed Assignments
1	Disassembly, check and assembly engine system 1	• Personal safety • Tool and equipment safety and use • Understanding Engine Operation and Structure • Understanding maintenance guidelines	CLO1	
2	Disassembly, check and assembly engine system 2	• Disassembly Cylinder Heads • Disassembly Intake and Exhaust Cam Shaft and Valves • Disassembly Oil fan • Disassembly Piston • Disassembly and Assembly Crankshaft • Assembly Piston • Assembly Oil fan • Assembly Intake and Exhaust Cam and Valves • Assembly Cylinder Heads	CLO1	
3	Disassembly, check and assembly engine system 3	• Disassembly Engine system • Check Cylinder Heads • Check Cam Shafts • Check Piston • Check Crankshaft • Check etc. • Assembly Engine system	CLO1	
4	Disassembly, check and assembly engine system 4	• Fuel System • Charging Systems • Fuel Pump • Fuel Cap Testing • Fuel lines • fuel injection • Ignition Systems. • Battery • Ignition Timing • ComputerControlled Systems • Switching device or control module • The secondary circuit • Distributor cap and rotor • Highvoltage cables • Spark plug • resistance wire	CLO1	**Practice report**

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed Assignments
5	Disassembly, check and assembly Lubricating system and Cooling System	• Knowledge of Lubricating System • Fault Cause of Lubrication System • Oil Exchange • Check Oil Pump • Knowledge of Cooling System • Pressure Test of Radiator Cap	CLO2	**Practice report**
6	Disassembly, check and assembly transmission system	• Clutches • Check the mounting surfaces of the bell housing clutch disc • Check the flywheel for signs of burning • Use a clutch alignment tool during disassembly and reassembly • Measuring the lining thickness of a bonded clutch disc, measure the total thickness of the facing or lining. • Check the pressure plate surface for warpage • Check the release levers of the pressure plate for uneven wear or damage. • Check the clutch for damage. • Check Oil Gears • Check Synchronizer unit	CLO3	**Practice report**
7	Disassembly, check and assembly Drive Axles and Differentials	• Check Front Wheel Drive (FWD) • Check Axles • Check CV Joints • Check Rear Wheel Drive Shafts • Check Drive Shaft and UJoint • Check Differentials and Drive.	CLO4	Practice report
8	**Midterm Exam**			
9	Disassembly, check and assembly Suspension system	• Check Frames • Check Suspension System Components • Independent Front Suspension, • Basic Front Suspension • Check Rear Suspension Systems. • Check Front Suspension Systems	CLO5	Practice report
10	Disassembly, check and assembly Tires and Wheels	• Check Wheels • Check Tires • Check Tire Size • Check Inflation Pressure • Check Tire Rotation • Check Tire Ratings and Designations • Check Tire/Wheel Runout	CLO6	
11	Disassembly, check and assembly Tires and Wheels	• Check Tire Replacement • Check Tire Repair, Installation of Tire/ • Wheel Assembly on the Vehicle • Check Tire/Wheel Assembly • Check Wheel Bearings.	CLO6	Practice report
12	Disassembly, check and assembly Wheel alignment	• Check Alignment Geometry • Check Pre alignment Inspection • Check Wheel Alignment Equipment • Check Alignment Machines • Check Performing an Alignment • Check Four Wheel Drive Vehicle Alignment.	CLO7	Practice report
13	Disassembly, check and assembly	• Check Principles of Hydraulic Brake Systems • Check Hydraulic Brake System Components	CLO8	Practice report

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed Assignments
	Automotive brake system	• Check Master Cylinders Operation • Check Drum Brake Assemblies • Check Disc Brake Assemblies • Check Hydraulic Brake Boosters • Check Pushrod Adjustment		
14	Disassembly, check and assembly Steering system	• Check Manual Steering Systems • Check Power Steering Systems • Check Electronically Controlled • Check Steering System Diagnosis • Check Steering System Servicing • Check Four Wheel Steering Systems.	CLO9	Practice report
15	Disassembly, check and assembly Automotive electric and electronic systems	• Check Lighting Systems • Check Batteries • Check Starting • Check Traction Motor • Check Charging Systems	CLO10	**Practice report**
16	**Final Exam**			

COURSE LEARNING RESOURCES

The effectiveness of teaching in this course depends on making students familiar with

The functions of clutch, transmission, drive shaft, axle shafts, final drive, differential, shock absorbers, struts, tires, steering system, wheel alignment, four-wheel drive system, transfer case, drum, disc and antilock brake systems

Teaching methods:

• Lectures and Home Works: using PowerPoint for, example, by the teacher to provide the students with the all information that they need,

• 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.

ONLINE RESOURCES

https://www.barnesandnoble.com/w/automotivetechnologyjamesdhalderman

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	6
Quizzes	6
Researches and Reports	8
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 lab. Absence of 10% will result in a first written warning. Absence more than 15% of the course with or without medical reasons will result in forfeiting the course and the student will not be permitted to attend the final examination

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. Waleed Momani **Department Head:**
Signature: **Signature:**
Date: **Date:**