



Arab Academy for Science, Technology & Maritime Transport
 College of Engineering & Technology
 Mechanical Engineering Department

University/Academy: Arab Academy for Science, Technology & Maritime Transport
Faculty/Institute: College of Engineering & Technology
Program: B.Sc. Mechanical Engineering

Form no. (12): **Course Specification**

1- Course Data

Course Code: ME 588	Course Title: Vehicle Maintenance & Repair	Academic Year/Level: 5th year / 10th semester	
Specialization: Mechanical	No. of Instructional Units 3 credits	Lecture 2 hrs.	Practical 2 hrs.

2- Course Aim

- To enable students to understand the diagnosis principles
- To teach students fundamentals of vehicle systems fault
- To help students acquire the ability to do diagnosis the vehicle system fault and do maintenance
- To teach students the basics of car service center layout, equipment's and management

3- Intended Learning Outcomes

a- Knowledge and Understanding	<p>Through knowledge and understanding, students will be able to:</p> <p>a.6) Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.</p> <p>a.7) Business and management principles relevant to engineering.</p> <p>a.p.4) The constraints which mechanical power and energy engineers have to judge to reach at an optimum solution</p> <p>a.a.1) Detailed knowledge and understanding of the themes and specialist subjects of the automotive</p> <p>a.a.4) The current practices in maintenance and repair shops of different vehicle aggregates</p>
b- Intellectual Skills	<p>Through intellectual skills, students will be able to:</p> <p>b.12) Create systematic and methodic approaches when dealing with new and advancing technology.</p> <p>b.a.1) The capacity at an appropriate level to identify project management knowledge and skills used in an automotive engineering context</p> <p>b.a.2) The ability to assess and analyze information in support of problem solving, design and development, critical evaluation of alternatives and performance data</p> <p>b.a.3) Create solutions to automotive engineering especially to manufacturing and maintenance problems in a creative way, taking account of industrial and commercial constraints</p>

c- Professional Skills	Through professional and practical skills, students will be able to: c.p.5) Design, operate, repair and maintain fluid hydraulic power systems for diverse applications c.p.7) Work in mechanical power and energy operations, maintenance and overhaul c.a.2) Experience at an appropriate level to use computer-aided design, analysis, logistics and maintenance packages relevant to automotive engineering c.a.3) Application of fault diagnosis procedures using the automotive industry special instrumentation to identify production and operation problems
d- General Skills	Through general and transferable skills, students will be able to:

4- Course Content

<p>Week No.1 Maintenance schedules</p> <p>Week No.2 Automotive tools, measuring instruments, testers and analyzers</p> <p>Week No.3 Workshop layout and planning</p> <p>Week No.4 Tests to evaluate engine performance</p> <p>Week No.5 Diagnosis theory and fundamental</p> <p>Week No.6 Fault diagnosis, maintenance and repair for: Fuel system components</p> <p>Week No.7 Ignition system diagnosis / 7th week evaluation</p> <p>Week No.8 Charging system, starting system diagnosis</p> <p>Week No.9 Barking system diagnosis</p> <p>Week No.10 Steering system diagnosis</p> <p>Week No.11 Tires and suspension system diagnosis</p> <p>Week No.12 Body repairing and refinishing / 12th week evaluation</p> <p>Week No.13 Body repairing and refinishing (cont.).</p> <p>Week No.14 Body repairing and refinishing tools and equipments</p> <p>Week No.15 Management of out-service and repair centers</p> <p>Week No.16 Final Examinations</p>
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5- Teaching and Learning Methods

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

6-Teaching and Learning Methods for Students with Special Needs

- Lectures
- Tutorials
- Reports & sheets
- Laboratories
- Seminars

Engineering Requirements and Design Considerations in college Buildings and its Leading Passages

- The design of college buildings and pedestrian passages leading to it are sloppy to allow the transportation of the handicapped;
- Doors are wide enough to let wheel chairs pass through easily and conveniently.
- Lifts are provided for movement between floors.
- Doors are made from light weight materials to make it easy for the handicapped suffering from weakness in limb muscles or those handicapped using prosthetic limbs to deal with them with the least muscular effort.
- Class floors are made from non-slippery materials to prevent falls on the part of the handicapped.
- Sudden changes in the floor level are prevented.

Design Considerations of the Classes

- Class boards are placed at 60 cm high to allow wheeled chair users or those suffering from limited arm mobility use them.
- Enough spaces are left between seats and benches to prevent hindering the movement of wheeled chairs between them.
- Handicapped students sit among normal people in class to be able to interact with them. Nevertheless, in urgent cases according to the nature of the disability, the handicapped students sit in fixed suitable places whether at the front or the back of the class.
- Handicapped students sit close to the main exits of the class to be able to evacuate in case of emergencies.

Academic Support:

- The general academic advisor appoints an academic supervisor for handicapped students.
- Continuous follow ups are made for handicapped students after each assessment to evaluate their academic level of achievement

7- Student Assessment

a-Procedures used	1-Written Examinations to assess The Intended Learning Outcomes. 2-Class Activities (Reports, Discussions, -----) to assess The Intellectual and general Skills.	
b- Schedule:	Assessment 1 Assessment 2 Assessment 3 Assessment 4	7 th Week Assessment 12 th Week Assessment Continuous Assessments 16 th Week Final Written Exam
c- Weighing of Assessment	7 th Week Evaluation 12 th Week Evaluation Final-term Examination Oral Examination Practical Examination Semester Work	30 % 20 % 40 % 00 % 00 % 10 %

	Total	100%
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8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	<ul style="list-style-type: none"> • Tim Gilles, "Automotive Service: Inspection, Maintenance, Repair", Delmar Cengage Learning; 3 edition (July 31, 2007)
c- Recommended Books	<ul style="list-style-type: none"> • William k. Toboldt & Larry Johnson "Automotive Encyclopaedia" • Martin, W., Stokel, "Auto – Service and Repair", McGraw Hill Book Co., 1991 • Tempest, Clifford. "Automotive Service Technology", McGraw Hill, New York, 1977 • James D. Halderman," Automotive Technology Principles, diagnoses, and services" PEARSON Education, fourth edition, • Tim Gilles, "Automotive Service: Inspection, Maintenance, Repair", Delmar Cengage Learning; 3 edition (July 31, 2007)
d- Periodicals, Web Sites, etc.	N/A

Course Instructor: Dr. Walid Abdel Ghaffar

Head of Department: Prof. El-Sayed Saber

Program Manager: Prof. El-Sayed Saber

Dean of College of Engineering and Technology of AASTMT

Name: **Prof. Moustafa Hussein Aly**
Signature:

Executive Manager of Quality Assurance Center of AASTMT

Name: **Prof. Aziz Ezzat**
Signature: