



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 584	Course Title: Automotive Electric and Electronics Systems	Academic Year/Level: 5th year / 9th semester
Specialization: Mechanical	No. of Instructional Units 3 credits	Lecture 2 hrs.
		Practical 2 hrs.

2- Course Aim

- To enable students to understand the vehicle wiring diagram
- To teach students fundamentals of the sensor and actuator function and circuit
- To help students acquire the ability to do diagnosis
- To teach students the basics of dealing with the modern vehicle ECU and electronic systems

3- Intended Learning Outcomes

a- Knowledge and Understanding	Through knowledge and understanding, students will be able to: a.6) Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues. a.7) Business and management principles relevant to engineering. a.p.4) The constraints which mechanical power and energy engineers have to judge to reach at an Optimum solution a.a.1) Detailed knowledge and understanding of the themes and specialist subjects of the automotive a.a.2) The requirements, limitation and design processes for power train, undercarriage, braking, chassis, vehicle body, electrical systems and vehicle interior a.a.5) The hardware, software and networks of computer systems used in automotive industry logistics and Performance evaluation
b- Intellectual Skills	Through intellectual skills, students will be able to: b.12) Create systematic and methodic approaches when dealing with new and advancing technology. 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
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.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

Week No.1	The alternator, Alternator regulators
Week No.2	Alternator Testing Services
Week No.3	Starting motor, starter service
Week No.4	Storage batteries
Week No.5	Body Electrical Wiring system
Week No.6	Lighting system –
Week No.7	Meters and gauges / 7th week evaluation
Week No.8	Ignition switch and steering lock, wind shield wipers and washers, fuses and relays
Week No.9	Electronic stability programmed , Anti lock (ABS), Electronic Traction Support (ETS), Brake System, Acceleration Slip Regulation (ASR),(ADS)
Week No.10	Electronic stability programmed , Anti lock (ABS), Electronic Traction Support (ETS), Brake System, Acceleration Slip Regulation (ASR),(ADS)
Week No.11	Parking aids, Vision enhancement systems-
Week No.12	Anti- Lock brake system (ABS), Electronic traction support (ETS), Acceleration slip regulation (ASR) / 12th week evaluation
Week No.13	Intelligent vehicle diagnostics.
Week No.14	Heating and Automotive air conditioning
Week No.15	Heating and Automotive air conditioning (Cont.)
Week No.16	Final Examination

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	7 th Week Assessment
	Assessment 2	12 th Week Assessment
	Assessment 3	Continuous Assessments
	Assessment 4	16 th Week Final Written Exam
c- Weighing of Assessment	7 th Week Evaluation	30 %
	12 th Week Evaluation	20 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	00 %
	Semester Work	10 %
	Total	100%

8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	• Robert, N., Brady, "Electrical and Electronic Systems for Automobiles and Trucks", McGraw Hill Book Co., Latest Edition.
c- Recommended Books	<ul style="list-style-type: none"> • Robert, N., Brady, "Electrical and Electronic Systems for Automobiles and Trucks", McGraw Hill Book Co., 1986 • Crouse, William H., " Automotive Electronics and Electrical Equipment" McGraw Hill, New York, 1986 • Kershaw, John F., "Automotive Control Systems: For Engine, Driveline and vehicle", Pearson Education, 2005. • William k. Toboldt & Larry Johnson "Automotive Encyclopedia"
d- Periodicals, Web Sites, etc.	N/A

Course Instructor: Dr. Walid Abdel Ghaffar

Head of Department: Prof. El-Sayed Saber

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Dean of College of Engineering and Technology of AASTMT

Name: Prof. Moustafa Hussein Aly

Signature:

Executive Manager of Quality Assurance Center of AASTMT

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