



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 587	Course Title: Automotive Manufacturing	Academic Year/Level: 5th year / 10th semester	
Specialization: Mechanical	No. of Instructional Units 3 credits	Lecture 2 hrs.	Practical 4 hrs.

2- Course Aim

- To enable students to understand vehicle assembly line techniques
- To teach students fundamentals of alternative fuel and power system operation and engine systems.
- To help students acquire the ability to select the vehicle material
- To teach students the basics of vehicle testing

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.3) The current practices in manufacturing relevant to the core modules of the program
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.1) The capacity at an appropriate level to identify project management knowledge and skills used in an automotive engineering context 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 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	Structure and manufacturing technology of automotive materials.
Week No.2	Mechanical and physical properties of automotive materials
Week No.3	Materials selection for automotive component
Week No.4	Lightweight construction materials and techniques
Week No.5	Design to manufacture as a single process
Week No.6	Manufacturing analysis, tools and methods
Week No.7	7th week exam + Manufacturing and assembly processes / 7th week evaluation
Week No.8	Manufacturing and assembly processes (cont.)
Week No.9	Assembly lines
Week No.10	Assembly lines (cont.)
Week No.11	Design of production lines
Week No.12	12th week exam + Quality control and inspection / 12th week evaluation
Week No.13	Testing and failure prediction and avoidance.
Week No.14	Testing of the final product
Week No.15	Economics of manufacturing and assembly operations
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%
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8- List of References:

a- Course Notes	N/A
b- Required Books (Textbooks)	<ul style="list-style-type: none"> • Marcello Chiaberge, "New trends and developments in automotive system engineering", InTech, latest edition
c- Recommended Books	<ul style="list-style-type: none"> • Julian happian, Smith "An introduction to Modern Vehicle Design" • Ron Hodgkinson, John Fenton, "Light Weight Electric/ Hybrid Vehicle Design" • William k. Toboldt & Larry Johnson "Automotive Encyclopedia" • Marcello Chiaberge, "New trends and developments in automotive system engineering", InTech, latest edition
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: