



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: <b>ME 482</b>	Course Title: <b>Automotive Engines</b>	Academic Year/Level: <b>4th year / 8th semester</b>
Specialization: <b>Mechanical</b>	No. of Instructional Units <b>3 credits</b>	Lecture <b>2 hrs.</b>
		Practical <b>2 hrs.</b>

#### 2- Course Aim

- To enable students to identify and understand the different types of engine systems and their components .
- To teach students fundamentals of flame theory and kinetics
- To help students acquire the ability to do engine design calculations
- To teach students the basics of engine instruments and emissions

#### 3- Intended Learning Outcomes

<b>a- Knowledge and Understanding</b>	<p><b>Through knowledge and understanding, students will be able to:</b></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.6) The drivability, safety limitations and compulsory tests especially applied in automotive</p> <p>a.a.6) The drivability, safety limitations and compulsory tests especially applied in automotive</p>
<b>b- Intellectual Skills</b>	<p><b>Through intellectual skills, students will be able to:</b></p> <p>b.12) Create systematic and methodic approaches when dealing with new and advancing technology.</p> <p>b.a.2) The ability to assess and analyze information in support of problem solving, design and development,</p>
<b>c- Professional Skills</b>	<p><b>Through professional and practical skills, students will be able to:</b></p> <p>c.p.5) Design, operate, repair and maintain fluid hydraulic power systems for diverse applications</p>

	<p>c.p.7) Work in mechanical power and energy operations, maintenance and overhaul</p> <p>c.a.3) Application of fault diagnosis procedures using the automotive industry special instrumentation to identify production and operation problems</p>
<b>d- General Skills</b>	<b>Through general and transferable skills, students will be able to:</b>

#### 4- Course Content

<b>Week No.1</b>	Engine components
<b>Week No.2</b>	Gasoline engine operation
<b>Week No.3</b>	Engine cycles
<b>Week No.4</b>	Engine Otto cycle
<b>Week No.5</b>	Diesel Engine theory of Operation
<b>Week No.6</b>	Engine Instruments-
<b>Week No.7</b>	Flam Theory / 7th week evaluation
<b>Week No.8</b>	Flame Theory (Cont.)
<b>Week No.9</b>	Chemical Kinetics
<b>Week No.10</b>	Chemical Kinetics (Cont.)
<b>Week No.11</b>	Engine Cooling System –
<b>Week No.12</b>	Engine Lubrication System / 12th week evaluation
<b>Week No.13</b>	Engine Lubrication System (Cont.).
<b>Week No.14</b>	Engine Emissions formation
<b>Week No.15</b>	Rivision
<b>Week No.16</b>	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**

<b>a-Procedures used</b>	1-Written Examinations to assess The Intended Learning Outcomes. 2-Class Activities (Reports, Discussions, -----) to assess The Intellectual and general Skills.
<b>b- Schedule:</b>	Assessment 1                      7 <sup>th</sup> Week Assessment Assessment 2                      12 <sup>th</sup> Week Assessment Assessment 3                      Continuous Assessments Assessment 4                      16 <sup>th</sup> Week Final Written Exam

<b>c- Weighing of Assessment</b>	7 <sup>th</sup> Week Evaluation	30 %
	12 <sup>th</sup> Week Evaluation	20 %
	Final-term Examination	40 %
	Oral Examination	00 %
	Practical Examination	00 %
	Semester Work	10 %
	Total	100%

**8- List of References:**

<b>a- Course Notes</b>	N/A
<b>b- Required Books</b> (Textbooks)	• James D. Halderman & Chase D. Mitchell, Jr., "Automotive Engines: Theory and Servicing". – Latest Edition.
<b>c- Recommended Books</b>	• Heinz Heisler, "Vehicle and Engine Technology" Arnold, Hodder Headline Group, 1999.
<b>d- Periodicals, Web Sites, etc.</b>	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: