



Arab Academy for Science, Technology & Maritime Transport
College of Engineering & Technology
Mechanical Engineering (Mechatronics) Program

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 385	Course Title: Internal Combustion Engines	Academic Year/Level: 3rd year / 5th semester
Specialization: Mechanical	No. of Instructional Units 3 credits	Lecture 2 hrs.
		Practical 2 hrs.

2- Course Aim

- To enable students to identify and understand the different types of internal combustion engines and their components .
- To teach students fundamentals of engine operation and engine systems.
- To help students acquire the ability to do simple design calculations
- To teach students the basics of engine testing

3- Intended Learning Outcomes

i- Knowledge and Understanding	Through knowledge and understanding, students will be able to: K1) Concepts and theories of mathematics and sciences, appropriate to the discipline K4) Principles of design including elements design, process and/or a system related to specific disciplines.
j- Intellectual Skills	Through intellectual skills, students will be able to: I4) Combine, exchange, and assess different ideas, views, and knowledge from a range of sources.
k- Professional Skills	Through professional and practical skills, students will be able to: The ability to use the automotive workshop tools and instruments
l- General Skills	Through general and transferable skills, students will be able to: G2) Work in stressful environment and within constraints. G4) Demonstrate efficient IT capabilities.

4- Course Content

Week No.1	Engine types
Week No.2	Engine parts
Week No.3	Valve timing; effects on P-V diagram
Week No.4	Spark ignition vs compression ignition
Week No.5	Engine charging and volumetric efficiency
Week No.6	Fuel properties

Week No.7	Carburetors / 7th week evaluation
Week No.8	Carburetor calculations
Week No.9	Thermodynamics of combustion
Week No.10	Engine heat transfer
Week No.11	Energy balance of engines
Week No.12	Engine performance and testing (I) / 12th week evaluation
Week No.13	Engine performance and testing (II).
Week No.14	Octane and cetane ratings
Week No.15	Revision
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
- 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)	<ul style="list-style-type: none"> • Willard W. Pulkrabek , “engineering fundamental of the internal combustion engine” , Pearson, Prentice Hall, latest edition
c- Recommended Books	<ul style="list-style-type: none"> • J.B. Heywood, " Internal Combustion Engine Fundamentals," McGraw-Hill, Latest Edition • - Willard W. Pulkrabek , “engineering fundamental of the internal combustion engine” , Pearson, Prentice Hall, Lastest edition
d- Periodicals, Web Sites, etc.	N/A

Course coordinator:

Program Manager: