

**UNIVERSITY OF JORDAN  
FACULTY OF ENGINEERING & TECHNOLOGY  
DEPARTMENT OF MECHANICAL ENGINEERING**

**COURSE OUTLINE**

<b>ABET Unit Classification:</b>	Engineering Topic
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<b>Compliant Catalogue:</b>	2002/03
<b>Course Code:</b>	0954585
<b>Course Title:</b>	Internal Combustion Engines
<b>Credit Hours:</b>	3

<b>Class Schedule:</b>	Three fifty (50) minute sessions per week
<b>Laboratory Schedule:</b>	None
<b>Tutorial Schedule:</b>	None
<b>Duration:</b>	Sixteen (16) weeks.

<b>Course Coordinator:</b>	
<b>Prepared by:</b>	
<b>Date of Outline Preparation:</b>	
<b>Date of Last Revision:</b>	
<b>Checked by:</b>	
<b>Approved by HoD:</b>	HOD

# Autotronics (I)

## (Course Outline)

### ● Course Description :

#### Autotronics (I)

3 Credit Hours

This course aims at introducing the students to the basics of automobile systems with main emphasis on the engine system. It teaches the student to analyse the engine performance and study its characteristics. Types of fuels, combustion and pollution. Then the design of fuel feeding systems and cooling system. The course also includes an experimental part which allows the student to estimate the performance of both spark ignition and compression ignition engines, effect of some parameters on engine performance like ignition timing, Air/Fuel ratio, Compression ratio and perform an energy balance of the compression ignition engine.

#### Prerequisite by course :

Thermofluid Sciencel

#### Prerequisite by topic :

1. Air-standard cycles,
2. Flow through orifices
3. Bernoulli equation
4. Chemical thermodynamics.

### ● Recommended books:

- ❖ *Engineering Fundamentals of the Internal Combustion Engine*, by Willard Pulkrabek, 2<sup>nd</sup> Ed., Pearson PrenticeHall, 2004. [Text Book]
- ❖ *Internal Combustion Engines*, by V. Ganesan [Text Book]
- ❖ A course in internal combustion engines, by M. L. Mathur [Reference Book]

### ● Course Objectives :

To provides the student with :

1. A good understanding of the fundamental aspects of reciprocating engines, design, operation, testing and emission formation and control.
2. Presents a fundamental development of thermodynamics, heat transfer and fluid mechanics underlying the operation and design of combustion engines.
3. Provides the background in fuel and combustion chemistry.

### ● Course Intended Outcomes :

The student should be able to :

1. know the various parameters used for identifying engine performance and their measurement.
2. Identify the major factors that helps improving engine performance.
3. Have sound fundamental knowledge about the combustion process in SI & CI engines.
4. Design certain components like the carburettor, injector and others.
5. Develop a mathematical model for the ideal and fuel-air cycle and study the effect of certain parameters on engine performance.

