DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.

Course Syllabus

1. **Course number and name**
   ME 575 Internal Combustion Engines Laboratory

2. **Credits and contact hours**
   (0+1) 1 credit hour, 3 contact hours

3. **Course type**
   Face to face Learning Course (3+0)

4. **Instructor's or course coordinator's name**
   Eng. Dia' A. Afaneh

5. **Textbook information**
   Internal Combustion Engines Laboratory Manual.

   a. **Other supplemental materials**
      - Introduction to Internal Combustion Engines (4th Edition) by Richard Stone, Stone R. Published 2012 .
      - Engineering Fundamentals of Internal Combustion Engines" by W.W. Pulkrabek, 2nd Edition 2004. Prentice-Hall Book Company.
      - Internal Combustion Engines & Air Pollution, by Edward F. Obert.
      - Internal Combustion Engine Fundamentals, by J.B. Heywood.
      - Internal Combustion Engines in Theory & Practice, by C.F. Taylor
      - Instructor's notes

6. **Specific course information**
   a. **Catalog description**
      Introduction of reciprocating IC engines and Test rig, Performance Characteristics, Operation Principles, Method of approach, Combustion problems, Pollution & Impact on Environment.

   b. **Prerequisites or co-requisites**
      Co-requisite: ME 571 Internal Combustion Engines.

   c. **The course is:**
      Required in Mechanical Engineering Department.

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7. Specific goals for the course

a. Course outcomes:

After completion of the course, students are expected to be able to:

1. Identify different type of I.C. Engines and their Performance characteristics.
2. Perform calculations of engine performance characteristics.
3. Understand related topics such as: Fuels and combustion; Pollution of environment caused by I.C. Engines.
4. To understand the effect of fuel volatility in the I.C. Engines for different fuels.

b. The following student outcomes are addressed by the course:

SO-(b) an ability to design and conduct experiments as well as to analyze and interpret data.
SO-(e) an ability to identify, formulate and solve engineering problems
SO-(pc-2) prepare students to work professionally in thermal systems

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
Identify different type of I.C. Engines and their Performance characteristics.	-	Experiment	Question in exam
Perform calculations of engine performance characteristics.	-	Experiment	Question in exam
Understand related topics such as: Fuels and combustion; Pollution of environment caused by I.C. Engines.		Experiment	Question in exam
To understand the effect of fuel volatility in the I.C. Engines for different fuels.	-	Experiment	Question in exam
Student Outcomes			
SO-(b) an ability to design and conduct experiments as well as to analyze and interpret data.			

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SO-(e) an ability to identify, formulate and solve engineering problems			
SO-(pc-2) prepare students to work professionally in thermal systems			

9. Weekly Teaching Plan

Week No.	Lecture	Topic	Method of Delivery
1	Mon (13:00–16:00)	Introduction to R.I.C (spark-ignition) engine and Engine Test- Bed	Experiment
2	Mon (13:00–16:00)	Flames, Flame Propagation and Stability	Experiment
3	Mon (13:00–16:00)	Four-Stroke Diesel Engine Performance	Experiment
4	Mon (13:00–16:00)	Four-Stroke Spark-Ignition (Petrol) Engine Performance	Experiment
5	Mon (13:00–16:00)	Friction Power Measurement in Diesel Engine	Experiment
6	Mon (13:00–16:00)	Friction Power variation with engine speed by Motoring	Experiment
7	Mon (13:00–16:00)	Two-Stroke SI engine performance	Experiment
8	Mon (13:00–16:00)	Midterm Exam	Exam
9	Mon (13:00–16:00)	Open Combustion Chamber Performance	Experiment
10	Mon (13:00–16:00)	Motor Car Engine Component and Accessories	Experiment
11	Mon (13:00–16:00)	Distillation of Gasoline	Experiment
12	Mon (13:00–16:00)	Performance of Instant Gas Water Heater	Experiment
13	Mon (13:00–16:00)	Emission Gases and Air Pollution	Experiment
14	Mon (13:00–16:00)	Automobile systems	Experiment
15	Mon (13:00–16:00)	Final Exam	Exam

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10. Grade Distribution:

Assessment	Grade	Date
- Midterm Exam	30%	8th Week
- Assignments	30%	
- Final Examination	40%	15th Week

* Make-up exams will be offered for valid reasons. It may be different from regular exams