



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Introduction to Engine Thermodynamics							
Course Code		OTT219		Course Level		Short Cycle (Associate's Degree)			
ECTS Credit	4	Workload	100 ( <i>Hours</i> )	Theory	3	Practice	1	Laboratory	0
Objectives of the Course		The aim of this course, basic thermodynamics concepts and general principles of thermodynamics, Motor thermodynamics concepts, cycles, efficiency calculations and combustion analysis of engines It is to make.							
Course Content		In this course, the basic concepts of thermodynamics, changes in state of matter, heat and work changes, learn the ideal gas equation and details of state changes, etc.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Problem Solving					
Name of Lecturer(s)		Ins. Erdoğan PİRELİ							

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	70

### Recommended or Required Reading

1	Thermodynamics / Doç.Dr. Selim ÇETİNKAYA / Nobel Publication Distribution-1999 / ANKARA
2	Thermodynamics with Engineering Approach, Yunus A. Çengel. Michael A. Boles, Literature Publishing, 1996

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic Concepts (System, Environment, State Change, Cycle,) Zeroth Law of Thermodynamics
2	Theoretical	Heat and Work Transformations
3	Theoretical	Thermodynamic Properties of Pure Substances (Property Relations, P-V, T-S Diagrams)
4	Theoretical	Thermodynamic Properties of Pure Substances (Property Relations, P-V, T-S Diagrams)
5	Theoretical	Ideal Gas Equation and Changes in the State of Ideal Gases
6	Theoretical	The First Law of Thermodynamics
7	Theoretical	The Second Law of Thermodynamics
8	Theoretical	Motor Cycles, Comparison of Cycles
9	Intermediate Exam	Midterm
10	Theoretical	Engine Performance Characteristics
11	Theoretical	Work, Efficiency, Power in Internal Combustion Engines
12	Theoretical	Classification of Combustion Fuels in Compression Ignition Engines, Hydrocarbons, Alcohols and Derivatives, Classification of Combustion, Combustion Equations
13	Theoretical	Combustion Products and Analysis, Fuel and Combustion Tables, Alternative Fuels and Combustion
14	Theoretical	Combustion Knocking in Engines, Evaporation of Fuels, Knock Strength
15	Theoretical	Fuels, Physical and Chemical Properties, Physical Analysis of Combustion, Chemical Properties, Spark Plug Combustion in Ignition Engines
16	Final Exam	Semester final exam



**Workload Calculation**

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Lecture - Practice	14	1	1	28
Assignment	5	2	2	20
Midterm Examination	1	4	1	5
Final Examination	1	4	1	5
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = ECTS				4

\*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

1	Knows simple and engine thermodynamic concept cycles
2	Analyze combustion thermodynamics of liquids.
3	Draw the engine cycles and make the necessary calculations
4	To be able to comprehend the transformation of work and heat energies, to comprehend the general principles and basic laws of thermodynamics
5	To be able to comprehend fuel and combustion phenomena in engine

**Programme Outcomes (Automotive Technology)**

1	To be able to interpret and evaluate data, identify problems, analyze them, and develop evidence-based solutions by using basic knowledge and skills in the field.
2	Must be able to choose and effectively use the modern techniques, tools and information technologies necessary for field related applications.
3	Must be able to gain practical skills by examining relevant processes in industry and service sector on site.
4	They must be able to produce solutions, take responsibility for teams or do individual work when they encounter situations unforeseen in the field related applications.
5	Awareness of the need for lifelong learning; it must be able to follow the developments in science and technology and to constantly renew itself.
6	Must be able to use computer software and hardware at the basic level required by the field
7	Must have job security, worker health, environmental protection knowledge and quality awareness.
8	He must possess a level of foreign language knowledge that is capable of following the innovations in his area of expertise and communication techniques.
9	Must be able to acquire basic theoretical and practical knowledge about the field in mathematics, science and basic engineering.
10	It should have the ability to plan the processes / processes of the Automotive Program to meet the expectations of the sector.
11	To be able to design the systems and components related to the field by using technical drawing, computer aided drawing, designing using simulation programs and using various softwares, to be able to make basic sizing calculations, to be able to master professional plans and projects.

**Contribution of Learning Outcomes to Programme Outcomes** 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	5	4	5	4	5
P2	3	4	5	3	5
P3	5	5	5	4	4
P4	2	4	4	4	5
P5	2	5	5	5	4
P6	4	5	4	4	5
P7	2	5	5	4	5
P8	3	4	5	5	4
P9	4	4	4	5	4
P10	4	5	4	4	5
P11	4	4	4	4	5

