



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Thermodynamics							
Course Code		MKE209		Course Level		Short Cycle (Associate's Degree)			
ECTS Credit	2	Workload	50 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		Basic thermodynamic concepts, work, thermodynamic laws, cycles, motor cycles, power, yield expressions, combustion and the theory of fuels.							
Course Content		Basic concepts, laws of thermodynamics, thermodynamic properties of pure substance							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Problem Solving					
Name of Lecturer(s)		Assoc. Prof. Murat ÜNVERDİ							

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Termodinamik Ders Notları
---	---------------------------

Week	Weekly Detailed Course Contents	
1	Theoretical	Basic concepts (system, environment, state change, cycle), the zero law of thermodynamics
2	Theoretical	Heat and work conversions
3	Theoretical	Thermodynamic properties of pure substance (property relations, p-v, T-s diagrams)
4	Theoretical	Thermodynamic properties of pure substance (property relations, p-v, T-s diagrams)
5	Theoretical	Ideal gas equation and state changes of ideal gases
6	Theoretical	1st Law of Thermodynamics
7	Theoretical	2nd law of thermodynamics
8	Theoretical	Engine cycles, comparison of cycles
9	Intermediate Exam	Midterm
10	Theoretical	Work, efficiency, power in internal combustion engines
11	Theoretical	Engine performance characteristics
12	Theoretical	Fuels, physical and chemical properties, physical analysis of chemical, chemical properties, burning in spark-ignition engines
13	Theoretical	Classification of combustion fuels in compression ignition engines, hydrocarbons, alcohols and their derivatives, classification of combustion, combustion equations
14	Theoretical	Combustion products and analysis, fuel and combustion related tables, alternative fuels and combustion
15	Theoretical	In motors, the sources of burning are knocking, evaporation of fuels, knock resistance
16	Final Exam	Final Examination

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Assignment	5	0	1	5
Term Project	5	0	1	5
Midterm Examination	1	5	1	6
Final Examination	1	5	1	6
Total Workload (Hours)				50
[Total Workload (Hours) / 25*] = ECTS				2

*25 hour workload is accepted as 1 ECTS



Learning Outcomes

1	To be able to make Energy Transformations and General Energy Analysis
2	To be able to analyze energy of closed systems
3	To make basic thermodynamic calculations
4	Draw motor cycles and make necessary calculations
5	Gas Steam Mixtures and Air Conditioning

Programme Outcomes (Machinery)

1	To be able to know general properties and usage areas of industrial materials and make selection.
2	Design of machine elements.
3	To be able to make production using machining and welding machines without machining.
4	To be able to make measurement and quality control processes with machine tools for measuring and control equipment.
5	To be able to make necessary corrections in order to determine the mistakes by using the necessary non-destructive test methods in welded parts and to eliminate these mistakes.
6	Preventive measures to prevent the occurrence of these faults by preliminarily determining the faults that will occur in the machines as statistical data and to make necessary interventions in case of breakdown.
7	They can make drawings of work pieces on CAD station and apply them on CNC looms. Ability to operate and use CAD / CAM and AUTOCAD package programs.
8	To be able to transfer engineering science and technology to practice by making calculations in the direction of scientific principles.
9	It can repair the elements in pneumatic and hydraulic systems which are indispensable elements of automatic control systems and can regulate their work.
10	The student who is trained as a machine technician during the whole program knows that industrial task definition in the field of work is error finding, problem solving, decision making, planning of functions and activities and they can be achieved by aiming to acquire these characteristics.

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

	L3	L4
P1	5	5
P2	5	5
P3	4	4
P4	4	4
P5	4	5
P6	4	5
P7	4	5
P8	3	3
P9	4	5
P10	5	5

