



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Thermodynamics							
Course Code		BSM331		Course Level		First Cycle (Bachelor's Degree)			
ECTS Credit	3	Workload	74 (Hours)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		The aim of this is to provide understanding and application of thermodynamics laws in to the engineering systems.							
Course Content		Basic concepts of thermodynamics, forms of energy, system and its properties, pressure and temperature concepts, first law of thermodynamics, phases of pure substances, phase changes processes, ideal gases, compressibility factor, first law of thermodynamics: application to closes and open systems, second law of thermodynamics, reversible and irreversible phase changes, Carnot cycle, heat engine, refrigerators, heat pumps, entropy, reversible steady-flow work, reversible work and irreversibility, gas power cycles, Otto ve Diesel cycles, refrigeration cycles, gas vapor mixtures, thermodynamics properties properties of water vapor and moist air, air conditioning processes							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Problem Solving					
Name of Lecturer(s)		Lec. Yüksel AYDOĞAN							

### Assessment Methods and Criteria

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

### Recommended or Required Reading

1	Çengel, Y.A., M.A. Boles, 2007. Thermodynamics, an Engineering Approach Sixth Edition. Mc Graw Hill, Isbn: 978-007-8. Çengel, Y.A., M.A. Boles, 2008.
---	--

Week	Weekly Detailed Course Contents	
1	Theoretical	basic concepts of thermodynamics- Zeroth Law of thermodynamics
2	Theoretical	Properties of pure substances
3	Theoretical	First law of thermodynamics-closes systems, energy transfer by heat, work and mass
4	Theoretical	First law of thermodynamics-open systems
5	Theoretical	Second law of thermodynamics: heat engines, refrigerators
6	Theoretical	Second law of thermodynamics: heat pumps, carnot principles
7	Theoretical	Entropy
8	Theoretical	Midterm exam
9	Theoretical	Exergy
10	Theoretical	Gas power cycles
11	Theoretical	Refrigeration cycles
12	Theoretical	Gas mixtures
13	Theoretical	Gas-vapor mixtures
14	Theoretical	Water vapor and thermodynamical properties
15	Theoretical	Air conditionşng processes
16	Theoretical	Final exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	2	56
Midterm Examination	1	8	1	9
Final Examination	1	8	1	9
Total Workload (Hours)				74
[Total Workload (Hours) / 25*] = ECTS				3

\*25 hour workload is accepted as 1 ECTS



**Learning Outcomes**

1	Understanding of basic definitions and zeroth law of thermodynamics
2	Understanding of properties of pure substances, ideal gas equation of state and ability to use the solving of technical issues.
3	Understanding of first law of thermodynamic and applying the first of thermodynamic to the closed and control volumes
4	Understanding of energy transfer by heat, work and mass and ability to solve technical problems.
5	Understanding of second law of thermodynamic and applying to the systems.

**Programme Outcomes (Dairy Technology)**

1	Having sufficient infrastructure in basic sciences and engineering subjects and ability to use the theoretical and applied info instantly in this field.
2	Determining the modern techniques, tools and information technologies required for applications related with his field and ability to use them efficiently
3	Ability for planning, projecting, and designing, following up, analyzing and finding target-driven solutions related with his field
4	Ability to have professional ethic and awareness.
5	Ability to work, decide, express opinions orally and in written individually
6	Ability to participate team studies, taking responsibility, making leadership.
7	Ability to conceive Atatürk's principles and reforms, to communicate in Turkish and foreign language.
8	Ability to comprehend the necessity to learn for a life time, to monitor developments in science and technology and continuously renew himself.
9	Having sufficient level of information about production and quality control of milk and dairy products and also product development, increasing product quality and food security fields.
10	Ability to detect, define, solve problems related with his field and to select and apply suitable methods and modeling techniques for this purpose.
11	To be conscious about workplace applications, worker health, work security and environment subjects, to have knowledge about legal results of the engineering applications related with his subject.

**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	5	5	5	5

