



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		History of Science							
Course Code		FİZ233		Couse Level		First Cycle (Bachelor's Degree)			
ECTS Credit	4	Workload	105 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		To observe the meaning and the importance of science and physics by concerning the evaluation of them until today through different periods of history in the meaning of science generally and physics specially.							
Course Content		The origin of the thoughts of ancient human and connection between it and produce devices and study, Mesopotamia and Egyptian's civilization's thoughts and the effects of them on development of forthcoming scientific thoughts, The discussion of the origin of ancient Greek civilization and first scientific thoughts and the fact that why they didn't be created elsewhere, The features of the thoughts of Ionia, Athens, Alexandria, The comparison of the character of the science in west and in east in the middle age, The contributions of scientists such that Planck, Einstein, Rutherford, Bohr, Dirac, Fermi, Heisenberg, de Broglie.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	20
Final Examination	1	60
Quiz	2	20

Recommended or Required Reading

1	Bilimler tarihi Cilt:I ve II, J. D. Bernal, Sosyal Yayınları, İstanbul, 1975
2	Bilimsel Devrimlerin Yapısı, Thomas Kuhn
3	Orta Çağda Bilimin Gelişimi, Richard Westfall, Tübitak Yayınları
4	Bilim ve Şarlatanlık, Hüseyin Batuhan, Yapı Kredi Yayınları, İstanbul, 1993
5	Michael Fowler, History of Physics,
6	www.galileoandstein.physics.virginia.edu/lectures/lecturelist.html

Week	Weekly Detailed Course Contents	
1	Theoretical	The origin of the thoughts of ancient human and connection between it and produce devices and study
2	Theoretical	Mesopotamia and Egyptian's civilization's thoughts and the effects of them on development of forthcoming scientific thoughts
3	Theoretical	The discussion of the origin of ancient Greek civilization and first scientific thoughts and the fact that why they didn't be created elsewhere
4	Theoretical	The features of the thoughts of Ionia, Athens, Alexandria
5	Theoretical	The comparison of the character of the science in west and in east in the middle age
6	Theoretical	The discovery of America and the origin of new social structures and new ideas
7	Theoretical	Renaissance and reform period and the role of them on scientific development
8	Intermediate Exam	Midterm
9	Theoretical	The resistance against renaissance and reform actions and spread of scientific thought
10	Theoretical	The origin of Newton period science and the meaning of it
11	Theoretical	The extension of Newtonian science
12	Theoretical	The origin of industrial revolution and industrial revolution-science effect
13	Theoretical	The origin of classical science and the generalization of Newton equations
14	Theoretical	The maturation of classical science and the development of electromagnetic theory and construction of connection between statistical physics and thermodynamics and the role of probability in physics, the contributions of Maxwell, Gauss, Boltzmann



15	Theoretical	The deficiencies in classical science and the origin of the modern science, quantum physics, statistical physics, particle physics, nuclear physics and developments of them until today and the contributions of scientists such that Planck, Einstein, Rutherford, Bohr, Dirac, Fermi, Heisenberg, de Broglie
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Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	1	3	56
Quiz	2	7	0.5	15
Midterm Examination	1	10	2	12
Final Examination	1	20	2	22
Total Workload (Hours)				105
[Total Workload (Hours) / 25*] = ECTS				4

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Must understand the origins of the ideas of ancient people and the connection between it and producing devices and studying.
2	Must present the Mesopotamia and Egyptian's civilization's thoughts and the effects of them on forthcoming scientific thoughts.
3	Must present the origin of ancient Greek civilization and the origin of first scientific thoughts.
4	Must present the features of science in ancient Greek in Ionia Athens Alexandria and the contribution of ones such that Thales, Pythagoras, Aristo, Euclides, Erastofones, Archimedes, Ptolemaeos.
5	Must compare the states of science in West and in East in the middle age and the perception of ancient Greek science in the east and the developments in science in the east and understand the thoughts of İbni Sina, Ömer Hayyam, El-Jabiri, El-Hayzen, Farabi, İbni-Rüşd.
6	Must represent the renaissance reform periods and the effects of them on the development of science and must explain the contribution of ones especially Copernicus, Bruno, Kepler and Galileo.
7	To represent the origin of Newtonian mechanics and contribution of it on scientific and social change and the contribution of scientists such that Newton, Hook, Boyle, Leibnitz and Huygens.
8	Must represent the interaction between industrial revolution and science and the fact that this interactions' being cause for what kind of developments
9	Must represent the deficiencies of classical science and the origin of modern science, quantum physics, statistical physics, particle physics and nuclear physics and the development of these until today. Must represent the contributions of scientists such that Planck, Einstein, Rutherford, Bohr, Dirac, Fermi, Heisenberg, de Broglie and Feynmann

Programme Outcomes (Physics)

1	To understand the importance of physics by understanding the general concepts of physics, matter and energy
2	To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential)
3	Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems,
4	To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to
5	To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields
6	Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology
7	To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons
8	Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject.
9	To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings
10	To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems
11	To be able to illustrate the laws, meanings and applications of thermodynamics and use them
12	Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei
13	To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking
14	To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature.
15	Use computer to solve physics problems
16	To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics
17	Be able to use the knowledge of physics to understand new technologies



18 To be able to tell the relations between symmetry and conservation laws in laws of physics

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

	L1	L2	L3	L4	L5	L6	L7	L8	L9
P1	4					4	3		
P2			4	4		4	5	4	
P4			4						4
P5								5	
P7									4
P11								4	
P13					4		4		4
P14		4			4				
P16								4	
P17	4	3						4	
P18									4

