Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Modern physics	FZK212	4. Semester	4 + 2	5.0	8.0

Prerequisites	None
Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Compulsory
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Ayşe KÜÇÜKARSLAN
Instructors	Assoc. Prof. Dr. Hilal GÖKTAŞ Assist. Prof. Dr. Mustafa KURT
Assistants	
Course Objectives	This course aims to help students understand the physics of particles moving at a speed close to that of light, have knowledge about the concepts of Modern Physics, recognize the situations that classical physics can not be applied, obtain introductory knowledge about the Quantum physics.
Course Content	Special rolativity, introduction to Quantum physics: blackbody radiation, photoelectric effect, Compton effect, atomic spectrums, uncertainty relation, wave-particle duality, Bohr atom model, Schrödinger's equation, particle in a box, tunneling, harmonic oscillator, Pauli exclusion principle, hydrogen atom, molecules, structure of nucleus.
Course Learning Outcomes	1) Explain the mechanics of particles moving at high speed 2) Interpret the nature of light 3) Define the concepts of Modern Physics 4) Recognize the situations that classical physics can not be applied. 5) Gain introductory knowledge about Quantum physics

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Relativity	Oral lectures with interactive discussions	
2. Week	Special relativity	Oral lectures with interactive discussions, homeworks	

Quick Access

Physics
- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

Course Information
- Course Information
- Weekly Course Content
- Resources
- Assessment
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

3. Week	Blackbody radiation	Oral lectures with interactive discussions, homeworks	
4. Week	Photoelectric effect	Oral lectures with interactive discussions, homeworks	
5. Week	Compton effect	Oral lectures with interactive discussions, homeworks	
6. Week	Atomic spectrums	Oral lectures with interactive discussions	
7. Week	Wave-particle duality	Oral lectures with interactive discussions	
8. Week	Wave-particle duality	Oral lectures with interactive discussions, homeworks	
9. Week	Bohr atomic model	Oral lectures with interactive discussions, homeworks	
10. Week	Schrödinger's equation, uncertainty principle	Oral lectures with interactive discussions	
11. Week	Particle in a box, Tunneling effect	Oral lectures with interactive discussions	
12. Week	Harmonic oscillator, Pauli exclusion principle	Oral lectures with interactive discussions	
13. Week	Hydrogen atom	Oral lectures with interactive discussions	
14. Week	Molecules, structure of nucleus	Oral lectures with interactive discussions, homeworks	
15. Week	Review of the semester	Oral lectures with interactive discussions, homeworks	
16. Week	Final exam	Exam	

RESOURCES

Recommended Sources
Arthur Beiser, Concepts of Modern Physics, 6th edition, 2003, McGraw-Hill Inc.
John R. Taylor, Chris D. Zafiratos, Michael A. Dubson, Modern Physics for Scientist and Engineers, 2nd edition, 2004.
Raymond A. Serway, Clement J. Moses, Curt A. Moyer, Modern Physics, 3rd edition, 2005, Thomson Learning, Inc.

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Mid-term exam, final exam, seminar, presentation, other		
In-Term Studies	**Quantity**	**Percentage**

Mid Term Exam 1	1	40
Total	1	40
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
PY1	5	5	0	5	4	4
PY2	4	4	0	4	4	5
PY3	2	2	0	2	2	3
PY4	4	4	0	5	4	4
PY5	4	5	0	4	4	4
PY6	3	4	0	4	4	3
PY7	3	4	0	3	3	3
PY8	0	3	3	2	2	2
PY9	0	4	4	4	4	4
PY10	0	2	2	2	2	2
PY11	0	2	2	2	2	2
PY12	0	1	1	1	1	1
PY13	0	1	1	1	1	1
PY14	0	3	3	3	3	3
PY15	0	3	3	3	3	3

*DK = Course's Contrubution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

.

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	6	84
Further Study	16	2	32
Assignment 1	5	2	10
Final Exam Preparation	1	18	18
Mid Term Exam Preparation	1	14	14

Application/Practice	10	2	20
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Preliminary Study	16	2	32
		Total Workload	214
		Total Workload / 25.5 (s)	8.39
		ECTS Credit of the Course	8