Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Experimental Technics in Physics	FZK368	6. Semester	2 + 2	3.0	7.0

Prerequisites	None
Language of Instruction	English
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Serhat ÖZDER
Instructors	
Assistants	
Course Objectives	In this course electron spin resonance, x-ray, electron diffraction, hall effect, birefringence and radioactivity events be able to worked as theoretically and experimentally.
Course Content	Theoretical lecture about ESR, Theoretical lecture about x-ray, Theoretical lecture about electron diffraction, Theoretical lecture about hall effect, Theoretical lecture about birefringence and polarisation, Theoretical lecture about half-life and radioactivity, ESR experiment, Characteristics x-rays of copper, Electron diffraction experiment, Hall effect in p-type germanium, Polarisation by quarterwave plates, Half-life and radioactivity experiment, Make-up, Reminding
Course Learning Outcomes	1) make experiments of knowledge about physics learned theoretically 2) make advanced physical experiments 3) learn the Hall effect that is a basic topic in material science 4) understand of spin-orbit interaction and zeeman effect by electron spin resonance experiment. 5) understand of birefringence 6) understand of half-life 7) understand of wave-particle dilemma that is one of the concepts of modern physics by electron diffraction

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Theoretical lecture about ESR	Oral lecture, laboratory, report, homework	
2. Week	Theoretical lecture about x-ray	Oral lecture,	

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
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

		laboratory, report, homework	
3. Week	Theoretical lecture about electron diffraction	Oral lecture, laboratory, report, homework	
4. Week	Theoretical lecture about hall effect	Oral lecture, laboratory, report, homework	
5. Week	Theoretical lecture about birefringence and polarisation	Oral lecture, laboratory, report, homework	
6. Week	Theoretical lecture about half-life and radioactivity	Oral lecture, laboratory, report, homework	
7. Week	ESR experiment	Oral lecture, laboratory, report, homework	
8. Week	Characteristics x-rays of copper	Oral lecture, laboratory, report, homework	
9. Week	mid-term exam	Written exam	
10. Week	Electron diffraction experiment	Oral lecture, laboratory, report, homework	
11. Week	Hall effect in p-type germanium	Oral lecture, laboratory, report, homework	
12. Week	Polarisation by quarterwave plates	Oral lecture, laboratory, report, homework	
13. Week	Half-life and radioactivity experiment	Oral lecture, laboratory, report, homework	
14. Week	Make-up	Oral lecture, laboratory, report, homework	
15. Week	Reminding	Oral lecture, laboratory, report, homework	
16. Week	final exam	Written exam	

RESOURCES

Recommended Sources
Fizikte Deneysel Teknikler Deney Föyü
Beiser A, Concept of Modern Physics
Prof. Dr. Apaydın F., “Kuantum Fiziği”, Hacettepe Üniversitesi
Prof.Dr. Dereli T., Prof.Dr. Verçin A., “Kuantum Mekaniği temel kavramlar ve uygulamaları
Cullity B.D., “Elements of x-ray diffractions”

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Report, exam, final

COURSE CATEGORY

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5	DK6	DK7
PY1	5	5	5	5	5	5	5	5
PY2	4	4	4	4	4	4	4	4
PY3	5	5	5	5	5	5	5	5
PY4	3	3	3	3	3	3	3	3
PY5	5	5	5	5	5	5	5	5
PY6	5	5	5	5	5	5	5	5
PY7	5	5	5	5	5	5	5	5
PY8	4	4	4	4	4	4	4	4
PY9	3	3	3	3	3	3	3	3
PY10	4	4	4	4	4	4	4	4
PY11	3	3	3	3	3	3	3	3
PY12	4	4	4	4	4	4	4	4
PY13	5	5	5	5	5	5	5	5
PY14	3	3	3	3	3	3	3	3
PY15	0	0	0	0	0	0	0	0

*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	4	56
Final Exam Preparation	1	12	12
Mid Term Exam Preparation	1	11	11
Further Study	6	2	12
Assignment 1	6	3	18
Application/Practice	14	4	56
Preliminary Study	14	1	14
		Total Workload	179
		Total Workload / 25.5 (s)	7.02
		ECTS Credit of the Course	7