Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
solid state physics	FZK450	8. Semester	2 + 2	3.0	8.0

Prerequisites	None
Language of Instruction	Turkish
Course Level	Bacheclor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assoc. Prof. Dr. Vildan BİLGİN
Instructors	Assoc. Prof. Dr. Vildan BİLGİN
Assistants	
Course Objectives	Free Electron Fermi Gas, Electron Levels in a periodic potential: General Properties, Electrons in a weak periodic potential, The tight binding Method, Semiconductor Crystals, Fermi Surfaces and Metals, Superconductivity.
Course Content	Free Electron Fermi Gas, Electron Levels in a periodic potential: General Properties, Electrons in a weak periodic potential, The tight binding Method, The tight binding Method, Semiconductor Crystals, Semiconductor Crystals, Fermi Surfaces and Metals, Midterm exam, Optical Process and Excitons, Superconductivity, Dielectrics and Ferroelectrics, Dielectrics and Ferroelectrics, Diamagnetism and paramagnetism, Ferromagnetism and antiferromagnetism, Noncrystalline Solids, Final
Course Learning Outcomes	1) Apply knowledge of natural sciences 2) Explain free electron and nearly free electron theories 3) Analyze the Bloch theorem 4) Describe some physical properties of materials 5) Explain optical properties of semiconductors 6) Explain natural phenomena 7) Identify the problems in related field

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Free Electron Fermi Gas	Lecture, Problem solving	
2. Week	Electron Levels in a periodic potential: General Properties, Electrons in a weak periodic potential	Lecture, Problem solving	
3. Week	The tight binding Method	Lecture, Problem	

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

		solving	
4. Week	The tight binding Method	Lecture, Problem solving	
5. Week	Semiconductor Crystals	Lecture, Problem solving	
6. Week	Semiconductor Crystals	Lecture, Problem solving	
7. Week	Fermi Surfaces and Metals	Lecture, Problem solving	
8. Week	Midterm exam	Exam	
9. Week	Optical Process and Excitons	Lecture, Problem solving	
10. Week	Superconductivity	Lecture, Problem solving	
11. Week	Dielectrics and Ferroelectrics	Lecture, Problem solving	
12. Week	Dielectrics and Ferroelectrics	Lecture, Problem solving	
13. Week	Diamagnetism and paramagnetism	Lecture, Problem solving	
14. Week	Ferromagnetism and antiferromagnetism	Lecture, Problem solving	
15. Week	Noncrystalline Solids	Lecture, Problem solving	
16. Week	Final Exam	Exam	

RESOURCES

Recommended Sources
Kittel, Charles (1996). Introduction to Solid State Physics, Seventh Edition, John Wiley & Sons, Inc.,
Hook, J.R., & Hall, H. E (2003). Solid State Physics, 2nd Edition, John Wiley & Sons
Balkemore, J.s . (1985). Solid State Physics, 2nd Edition, Cambridge University Press

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Midterm exam, Homework, Final exam		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	30
Assignment 1	1	20
Total	2	50
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	50
Total	1	50
Contribution Of In-Term Studies To Overall Grade		50
End-Term Studies		50
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	DK6	DK7
PY1	4	4	4	4	4	4	4	4
PY2	3	3	3	3	3	3	3	3
PY3	0	0	0	0	0	0	0	0
PY4	3	4	4	3	2	2	3	3
PY5	4	5	5	4	4	3	3	4
PY6	0	0	0	0	0	0	0	0
PY7	4	4	4	4	4	4	4	4
PY8	0	0	0	0	0	0	0	0
PY9	0	0	0	0	0	0	0	0
PY10	0	0	0	0	0	0	0	0
PY11	0	0	0	0	0	0	0	0
PY12	3	3	3	3	3	3	3	3
PY13	0	0	0	0	0	0	0	0
PY14	3	4	4	3	2	2	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

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ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	4	56
Final Exam Preparation	1	25	25
Mid Term Exam Preparation	1	13	13
Assignment 1	1	20	20
Final Exam	1	3	3
Further Study	14	6	84
Mid Term Exam 1	1	3	3
		Total Workload	204
		Total Workload / 25.5 (s)	8.00
		ECTS Credit of the Course	8