Fizik Bölümü / PHYSICS /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-3023	Introduction to Solid State Physics	3.00	0.00	0.00	3.00	6.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Optional
Preconditions	:	Not
Objectives of the Course	:	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 Contents	:	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
Recommended or Required Reading	:	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
Planned Learning Activities and Teaching Methods	:	Midterm exam, Homework, Final exam
Recommended Optional Programme Components	:	Knowledge of the fundamental physics courses is important.
Course Instructors	:	Prof. Dr. Kıvanç Sel
Instructor's Assistants	:	Assoc. Prof. Dr. Kıvanç SEL
Presentation Of Course	:	face to face

Course Outcomes

Upon the completion of this course a student :

1 Explain optical properties of semiconductors

2 Explain natural phenomena

3 Apply knowledge of natural sciences

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Free Electron Fermi Gas				*Lecture, Problem solving
2.Week	*Electron Levels in a periodic potential				*Lecture, Problem solving
3.Week	*The tight binding Method				*Lecture, Problem 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	*Fermi Surfaces and Metals				*Lecture, Problem solving
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	*Diamagnetism and paramagnetism				*Lecture, Problem solving

Assesment Methods %

1 Mid Term Exam 1 : 40.000

2 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	2.00	2.00
Final	1	2.00	2.00
Attending lectures	14	3.00	42.00
Individual study before lecture	14	3.00	42.00

Activities	Count	Time(Hour)	Sum of Workload
Individual study after lecture	14	4.00	56.00
Preparation for midterm	1	20.00	20.00
Preparation for final	1	25.00	25.00
		Total :	189.00
		Sum of Workload / 30 (Hour) :	6
		ECTS :	6.00

Program And OutcomeRelation

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24
L.O. 1	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 2	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ders/Program Çıktıları İlişkisi

P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24	P.O. 2
3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0