Fizik Bölümü / PHYSICS /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-3037	Nuclear Reactors	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	:	The aim of this course is to teach the fundamental aspects of Reactor Physics.
Course Contents	:	Introduction to basic reactor physics. Neutron nuclear reactions, Neutron chain fission. Neutron diffusion theory. Neutron diffusion theory. Neutron energy distribution, Nuclear reactor dynamics, Fuel burnup, Nuclear power reactors, Reactor safety, Radioactive waste, Transportation of radioactive waste and materials.
Recommended or Required Reading	:	Nuclear Power Technology on Trial, J. J. Duderstadt, C. Kikuchi, published by The University of Michigan Press, Ann Arbor, 1983. Nuclear Power Plant Design Analysis, A. Sesonske, published by Tecnical Information Center, Office of Information Services US ATOMIC ENERGY COMMISSION, 1973 Introduction to Nuclear Engineering, J. R. Lamarsh, 2nd edition, Addison-Wesley, Menlo Park, 1983
Planned Learning Activities and Teaching Methods	:	Lecture, Discussion, Report Preparation and / or Presentation.
Recommended Optional Programme Components	:	--
Course Instructors	:	Doç. Dr. Sibel Şen Prof. Dr. Emine Dilara Atalay
Instructor's Assistants	:	--
Presentation Of Course	:	Face to face / Online

Course Outcomes

Upon the completion of this course a student :

1 After completion of this course students will be able to: understand nuclear fission.

2 Get knowledge about the basics of nuclear physics.

3 Understand nuclear reactors principles.

4 Get knowledge about applications of nuclear reactors.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*Introduction to basic reactor physics.				*Lecture, Discussion, Report Preparation and / or Presentation.
2.Week	*Neutron nuclear reactions				
3.Week	*Neutron chain reactions.				
4.Week	*Neutron diffusion theory				
5.Week	*Neutron diffusion theory				
6.Week	*Neutron energy distribution				
7.Week	*Nuclear reactor dynamics				
8.Week	*Fuel burnup				
9.Week	*Nuclear power reactors				
10.Week	*Nuclear power reactors				
11.Week	*Nuclear power reactors				
12.Week	*Reactor safety				
13.Week	*Radioactive waste				
14.Week	*Transportation of radioactive waste and materials				

Assesment Methods %

1 Presentation/Seminar : 30.000

2 Ödev : 10.000

3 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Ödev	4	3.00	12.00
Individual study before lecture	3	5.00	15.00

Activities	Count	Time(Hour)	Sum of Workload
Preparation for final	14	2.00	28.00
Class Hours (14 weeks)	14	3.00	42.00
Presentation/Seminar	3	3.00	9.00
Further Study	14	3.00	42.00
Final Exam	1	3.00	3.00
Preliminary Study	14	3.00	42.00
		Total :	193.00
		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	2	3	3	4	3	3	3	2	3	2	2	3	4	3	3	3	2	4	3	3	3	2
L.O. 2	4	2	3	2	3	2	3	3	2	2	3	3	2	3	2	3	2	2	2	2	3	1	2	3
L.O. 3	4	3	3	3	2	3	3	3	4	2	2	2	3	2	3	2	3	3	2	3	2	2	3	2
L.O. 4	3	2	3	2	4	1	2	2	2	3	3	3	3	3	2	2	2	2	3	3	2	2	3	3

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	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3