Course Information

Course Code	T	P	L	C	ECTS	Type C/E	Language TR/ENG etc.	Year/Semester
FİZ4035	3	0	0	3	5	E	TR	4/FALL
Course Name (Turkish)	Reaktör Tekniği							
Course Name (English)	Reactor Technique							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	To provide students with basic reactor information and basic knowledge of the neutron-matter interaction mechanism
Course Outline	Interaction of neutrons with matter, reactor systems, reactor dynamics and safety
Textbook/ Material / Resources	1. Elmer E. LEWIS, Nuclear Reactor Physics, Academic Press,2008. 2. K.H. BECKURTS and K. WIRTZ, Neutron Physics, Springer –Verlag, 1964.
Internship Status	No

Course Precedents

University Name	Program Name	Course Name	T-P-L-C; ECTS	Type
Yeditepe University	**Chemical Engineering**	**Reactor Design**	**2-2-0-3; 6**	**C**
Atılım University	**Energy Systems Engineering**	**Reactor Design**	**3-0-0-3; 5**	**C**

The instructor who proposed the course (Title, Name and Surname)	*Signature*

Instructors who can teach the course (Title, Name and Surname)	*Signature*

Academic justification for the opening of the course? (The effect of course outcomes on program outcomes, etc.)

Brief explanation of the course (theoretical lecture, applications, laboratory, studio, off-campus activity, using software, etc.)

Face-to-face courses will be taught under the supervision of the relevant faculty member.

External Stakeholder Opinions About the Course (It is expected that the opinions to be obtained from the business world that will employ your graduates or from real or legal persons outside the University who have expertise on the subject of the course will be specified. Proof documents must be attached to this form.)

Stakeholder Name	Opinion (It should be given as a summary, it should not exceed two lines.)

Weekly Course Content Distribution		
Week	Theory	Application/Laboratory
1	Fundamentals of neutron behavior in nuclear reactors	
2	Interactions of neutrons with matter	
3	Interactions of neutrons with matter	
4	Nuclear reactor systems	
5	Nuclear reactor systems	
6	Fusion process	
7	Neutron diffusion and deceleration, criticality calculations	
8	Time-dependent behavior of nuclear reactors	
9	Midterm Exam	
10	Generating and extracting heat in nuclear reactors	
11	Point kinetic equations, reactivity coefficients,	
12	Reactor dynamics, reactor safety	
13	Reactor control in thermal reactors	
14	Power reactors and reactor materials	
15	Final Exam	
16		

Assessment			
	Activity	Custom	Contribution to Success Grade (%)
	Midterm Exams	1	40
	Quizzes		
	Assignments		
Evaluation Criteria	Projects		
	Term Paper		
	Laboratory		
	Other		
	Final Exam	1	60
		Sum:	100
Remarks			

	Mathematics and Basic Sciences	100
	Engineering Sciences	
Content Design and	Social Sciences	
Subject Weight (%)	Health Sciences	
	Educational Sciences	
	Culture and Art Sciences	
	Design Information	

Workload (ECTS) Calculation			
Events	**Number**	**Duration (Hours)**	**Total workload (Hours)**
Fieldwork			
Midterm Exam Application	1	2	2
Self-Study (including pre-class and exam preparation)	14	2	28
Make-up Exam	1	2	2
Experiment and Observation			
Class Participation (Theory)	14	3	42
Homework			
Final Exam Practice	1	2	2
Laboratory			
Article Review			
Writing an Article			
Reading			
Case Study			
Performance			
Problem Solution			
Project Preparation			
Project Submission			
Quiz			
Report Preparation			
Submitting Reports			
Role/Drama Work			
Seminar			
Oral Exam			
Team/Group Work	12	3	36
Argument	14	1	14
Application/Practice			
Other			
TOTAL WORKLOAD:			**126**
ECTS CREDİTS OF THE COURSE: *(The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)*			**5**

Program Outcomes (PO) / Learning Outcomes (LO) *(Course Outcomes)*	1	2	3	4	5	6	7	8	9	10	11
1	Learn the working principle of reactors	5	5	5	4	3	3	4	5	5	3	3
2	Have knowledge about reactor materials	5	5	5	4	3	3	4	5	5	3	3
3	Have an idea about the features of more efficient and useful new generation reactors	5	5	5	4	3	3	4	5	5	3	3

Organizer: Assoc. Prof. Dr. Serpil YALÇIN KUZU
Preparation Date: 20.05.2024