DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES
COURSE SYLLABUS

Course Details								
Code					**Academic Year**			**Semester**
EBT317					4			7
Title					**T**	**A**	**L**	**ECTS**
Advanced Nuclear Energy					3	2	0	6
Language	German							
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**			
Department / Program	Energy Science and Technology							
Forms of Teaching and Learning	Face-to-face							
Course Type	**Compulsory**		**Elective**	**X**				
Objectives	Advanced topics of nuclear engineering such as nuclear energetics, binary nuclear reactions, and nuclear power are investigated.							
Content	Nuclear energetics, principles of nuclear reactors, nuclear electric power, nuclear fuel cycle are the main topics.							
Prerequisites	-							
Coordinator	Asst. Prof. Dr. Elif Yunt							
Lecturer(s)	Asst. Prof. Dr. Elif Yunt							
Assistant(s)								
Work Placement	None							

Recommended or Required Reading	
Books / Lecture Notes	Einführung in die Kernphysik, Harry Friedmann, Wiley
Other Sources	J.R. and Baratta, A.J., Introduction to Nuclear Engineering, Lamarsh, 3rd Edition, Prentice- Hall.

Additional Course Material	
Documents	
Assignments	
Exams	

Course Composition		
Mathematics und Basic Sciences		%
Engineering	50	%
Engineering Design		%
Social Sciences		%
Educational Sciences		%

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Natural Sciences	50	%
Health Sciences		%
Expert Knowledge		%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	30
Quiz	4	20
Assignments	2	10
Attendance		
Recitations		
Projects		
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	5	70
Self-Study	14	6	84
Assignments	2	4	8
Presentation / Seminar Preparation			
Midterm Exam	1	2	2
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**166**
		ECTS Points (Total Work Load / Hours)	**6**

Learning Outcomes

1	To learn nuclear energtics
2	To learn about binary nuclear reactions
3	To gain an understanding of nuclear power processes
4	To learn about conversion of nuclear energy to electricity

Weekly Content

1	Introduction to Nuclear Processes
2	Nuclear Energetics: Binding Energy and Q-Values
3	Principles of Nuclear Reactors

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4	Neutron Moderation
5	Nuclear Electric power
6	Water Reactors
7	Nuclear Fuel Cycle
8	Midterm
9	Thermoelectric Electrical Generators
10	Types of Nuclear Reactors
11	Nuclear Technology in Industry
12	Nuclear Technology in Research
13	Medical Applications of Nuclear Technology I
14	Medical Applications of Nuclear Technology II
15	Overview

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	P2	P3	P4	P5	P6	P7	P8	P9
1	5	5	5	5	5	5	5	5	5
2	5	5	5	5	5	5	5	5	5
3	5	5	5	5	5	5	5	5	5
4	5	5	5	5	5	5	5	5	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=EN&curSunit=5706	
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