Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Neutron Physics	FZK465	7. Semester	3 + 0	3.0	7.0

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. Emine Dilara AYDIN
Instructors	
Assistants	
Course Objectives	Aim of the course is to give information about neutron interactions and the solution methods of the neutron transport equation.
Course Content	Physical properties of neutron, Cross section and Mean Free Path, Elastic Collision, (n,p) Collision, Inelastic Collision, Absorption of the neutron, Fission, Emergence of Charged Particles, Neutron Sources, Detection of Neutrons,Neutron Activation Method, Neutron Transport Theory, Neutron Transport Theory, Solution Methods of Neutron Transport Theory, Solution Methods of Neutron Transport Theory, One-Speed Diffusion Equation, Solution of the Diffusion Equation, Solution of the Diffusion Equation.
Course Learning Outcomes	1) After completion of this course students will be able to: have information about the neutron physical properties and the interaction of neutron with matter. 2) Make a comment on the methods of identification and solution of neutron transport equation. 3) Develop analytical solutions for the problems related to the subject and computer usage. 4) Learn applications of concepts that are discussed in theory to technology. 5) Create a problem and solution-oriented development in the relevant field of learning materials.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Physical properties of neutron	Oral lecture, questions-answers, homework	
2. Week	Cross section and Mean Free Path	Oral lecture, questions-answers,	

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
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

		homework	
3. Week	Elastic Collision, (n,p) Collision, Inelastic Collision	Oral lecture, questions-answers, homework	
4. Week	Absorption of the neutron, Fission, Emergence of Charged Particles.	Oral lecture, questions-answers, homework	
5. Week	Neutron Sources	Oral lecture, questions-answers, homework	
6. Week	Detection of Neutrons	Oral lecture, questions-answers, homework	
7. Week	Neutron Activation Method	Oral lecture, questions-answers, homework	
8. Week	Mid-term Exam		
9. Week	Neutron Transport Theory	Oral lecture, questions-answers, homework	
10. Week	Neutron Transport Theory	Oral lecture, questions-answers, homework	
11. Week	Solution Methods of Neutron Transport Theory	Oral lecture, questions-answers, homework	
12. Week	Solution Methods of Neutron Transport Theory	Oral lecture, questions-answers, homework	
13. Week	One-Speed Diffusion Equation	Oral lecture, questions-answers, homework	
14. Week	Solution of the Diffusion Equation	Oral lecture, questions-answers, homework	
15. Week	Solution of the Diffusion Equation	Oral lecture, questions-answers, homework	
16. Week	Final Exam		

RESOURCES

Recommended Sources
An introduction to neutron physics. L. F. Curtiss, 1959
Neutron physics, K. H. Beckurts, 1964
Neutron Fizigi , Bahriye Yaramis 1974

ASSESSMENT

Measurement and Evaluation Methods and Techniques
mid-term, quiz, final exam

COURSE CATEGORY

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
PY1	4	4	3	3	4	4
PY2	4	4	3	4	4	4
PY3	1	2	2	2	1	1
PY4	1	2	1	2	1	1
PY5	1	2	1	1	1	1
PY6	3	2	3	2	3	3
PY7	1	2	1	1	1	1
PY8	1	2	1	1	1	1
PY9	1	2	1	1	1	1
PY10	1	2	1	1	1	1
PY11	1	2	1	1	1	1
PY12	1	2	1	1	2	1
PY13	1	2	1	1	1	1
PY14	1	2	1	1	1	1
PY15	3	3	2	3	2	3

*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	3	42
Final Exam Preparation	1	18	18
Mid Term Exam Preparation	1	15	15
Further Study	14	5	70
Quiz 1	4	2	8
Assignment 1	4	2	8
Preliminary Study	14	1	14
Mid Term Exam 1	1	2	2
Final Exam	1	2	2
		Total Workload	179
		Total Workload / 25.5 (s)	7.02
		ECTS Credit of the Course	7