



Çanakkale Onsekiz Mart University

Education Information System

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Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Group Representations I	FZ-6015		3 + 0	3.0	7.5

Prerequisites	None
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Language of Instruction	Turkish
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Course Level	Third Cycle
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Course Type	Elective
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Mode of delivery	Face to face
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Course Coordinator	Assist. Prof. Dr. Sezgin AYGÜN
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Instructors	Prof. Dr. İhsan YILMAZ Prof. Dr. İsmail TARHAN Assist. Prof. Dr. Melis ULU DOĞRU Assist. Prof. Dr. Sezgin AYGÜN
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Assistants	
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Course Objectives	To learn elementary group theory, group axioms and their applications.
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Course Content	Elementary group theory, group axioms, permutation groups, multiplicative groups, isomorfizm, homomorfizm, otomorfizm, space and point groups, continuous groups (orthogonal and rotation groups, SO(3), unitary groups, Lorentz groups), group representations, finite dimensional representations, infinite dimensional representations, representations of matrix groups, group representations of SO(3) groups, unitary representations, reduction of representations, compact and non-compact groups and their representations, invariant integration, configuration event in physics
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Course Learning Outcomes	1) to learn the knowledge about elementary group theory, group axioms 2) to learn knowledge about permutation groups, multiplicative groups 3) to learn about isomorfizm, homomorfizm, otomorfizm
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Quick Access

Physics (PhD)

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Course Information

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WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Elementary group theory	Oral lectures Homeworks	
2. Week	group axioms	Oral lectures Homeworks	
3. Week	permutation groups	Oral lectures Homeworks	

4. Week	multiplicative groups	Oral lectures Homeworks	
5. Week	isomorfizm, homomorfizm, otomorfizm	Oral lectures Homeworks	
6. Week	space and point groups	Oral lectures Homeworks	
7. Week	continuous groups	Oral lectures Homeworks	
8. Week	orthogonal and rotation groups	Oral lectures Homeworks	
9. Week	SO(3), unitary groups	Oral lectures Homeworks	
10. Week	Lorentz groups, group representations, finite dimensional representations, infinite dimensional representations, representations of matrix groups, group representations of SO(3) groups, unitary representations	Oral lectures Homeworks	
11. Week	reduction of representations	Oral lectures Homeworks	
12. Week	compact and non-compact groups and their representations	Oral lectures Homeworks	
13. Week	invariant integration,	Oral lectures Homeworks	
14. Week	configuration event in physics	Oral lectures Homeworks	
15. Week	General review	Oral lectures Homeworks	
16. Week	General review	Oral lectures Homeworks	

RESOURCES

Recommended Sources
Birrell N.D., P.C.W. Davies, 1982, Quantum fields in curved space, Cambridge University Press
Kolb, E.W., Turner, M.S. (1990) The early universe; Addison Wesley Publishing Company
Weinberg, S., (1972). Gravitation and Cosmology: Principles and Applications of The General Theory of Relativity. Jhon Wiley & Sons Publishing.

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Mid-term exam, final exam, other

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3
<u>PY1</u>	5	5	5	5
<u>PY2</u>	5	5	5	5
<u>PY3</u>	5	5	5	5
<u>PY4</u>	5	5	3	5

<u>PY5</u>	4	5	3	4
<u>PY6</u>	5	5	5	5
<u>PY7</u>	5	5	5	5
<u>PY8</u>	5	5	5	5
<u>PY9</u>	5	4	5	5
<u>PY10</u>	4	5	4	5
<u>PY11</u>	5	5	5	5
<u>PY12</u>	5	5	5	5
<u>PY13</u>	5	5	5	5
<u>PY14</u>	5	5	4	5
<u>PY15</u>	5	5	5	5

*DK = Course's Contribution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Presentation/Seminar	6	2	12
Final Exam Preparation	1	20	20
Mid Term Exam Preparation	1	20	20
Further Study	6	2	12
Preliminary Study	14	2	28
Assignment 1	16	3	48
Assignment 2	3	2	6
Mid Term Exam 1	1	2	2
Final Exam	1	2	2
Total Workload			192
Total Workload / 25.5 (s)			7.53
ECTS Credit of the Course			8

