



Çanakkale Onsekiz Mart University

Education Information System

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Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Relativity Theory	FZ5028		3 + 0	3.0	7.5

Prerequisites	None
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Language of Instruction	Turkish
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Course Level	Second 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	Assist. Prof. Dr. Sezgin AYGÜN
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Assistants	
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Course Objectives	To learn basic cosmological equations and their various applications.
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Course Content	Gravitation Theories, Vectors and tensors, The calculation of Tensors, Space time curvature and space-time metrics, Space-time symmetries and its kinds, Energy-momentum tensors and its applications, Einstein field equations, Einstein field equations, Schwarzschild solution, Experimental tests of general relativity, Strong gravitational Fields I (Relativistic astrophysics), Strong gravitational Fields II (black holes), Friedmann models Stationary state theories, Einstein Field equations and its applications to gravitational theories.
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Course Learning Outcomes	<ol style="list-style-type: none"> 1) to learn about gravitation theories 2) to learn about tensors, vectors and scalars 3) To learn definition the space-time and curvature 4) To learn symmetries and its kinds 5) To learn Einstein field equations and its solutions 6) to learn about gravitational tests
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Quick Access

Physics (Master)

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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	Gravitation Theories	Oral lectures with interactive discussions	
2. Week	Vectors and tensors, The calculation of Tensors	Oral lectures with interactive discussions	
3. Week	Space time curvature and space-time metrics	Oral lectures with	

		interactive discussions	
4. Week	Space-time symmetries and its kinds	Oral lectures with interactive discussions	
5. Week	Energy-momentum tensors and its applications	Oral lectures with interactive discussions	
6. Week	Einstein field equations	Oral lectures with interactive discussions	
7. Week	Einstein field equations	Oral lectures with interactive discussions	
8. Week	Schwarzschild solution	Oral lectures with interactive discussions	
9. Week	Experimental tests of general relativity	Oral lectures with interactive discussions	
10. Week	Strong gravitational Fields I (Relativistic astrophysics)	Oral lectures with interactive discussions	
11. Week	Strong gravitational Fields II (black holes)	Oral lectures with interactive discussions	
12. Week	Friedmann models	Oral lectures with interactive discussions	
13. Week	Stationary state theories	Oral lectures with interactive discussions	
14. Week	Einstein Field equations and its applications to gravitational theories	Oral lectures with interactive discussions	
15. Week	general review	Oral lectures with interactive discussions, Applications	
16. Week	general review	Oral lectures with interactive discussions, Applications	

RESOURCES

Recommended Sources
Kozmolojiye Giriş ; A. Yüksel Özemre, (1981) İst. Üniv. Fen Fak. Yayınları no:161,
Spacetime and Geometry, An Introduction to General Relativity, Sean Carroll, (2003) ISBN-10: 0805387323
The early universe; Kolb,E.W., Turner, M.S. (1990) Addison Wesley Publishing Company

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Midterm exam, Final exam		
In-Term Studies	Quantity	Percentage
Mid Term Exam 1	1	40
Total	1	40

End-Term Studies	Quantity	Percentage
Final Exam	1	60
Total	1	60
Contribution Of In-Term Studies To Overall Grade		40
End-Term Studies		60
Total		100

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	DK6
PY1	5	5	5	5	5	5	5
PY2	5	5	5	5	5	5	5
PY3	5	5	5	5	5	5	5
PY4	5	5	5	5	5	5	5
PY5	5	5	5	5	5	5	5
PY6	5	5	5	5	5	5	5
PY7	5	5	5	5	5	5	5
PY8	5	5	5	5	5	5	5
PY9	5	5	5	4	5	5	5
PY10	5	5	5	5	5	5	5
PY11	5	5	5	5	5	5	5
PY12	5	5	5	5	5	5	5
PY13	5	5	5	5	5	5	5
PY14	5	5	5	5	5	5	5
PY15	5	5	5	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
Final Exam Preparation	1	28	28
Mid Term Exam Preparation	1	28	28
Further Study	16	3	48
Assignment 1	16	2	32
Presentation/Seminar	4	1	4
Final Exam	1	2	2

Mid Term Exam 1	1	2	2
Assignment 2	3	2	6
Total Workload			192
Total Workload / 25.5 (s)			7.53
ECTS Credit of the Course			8