



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 and Cosmology	FZK493	7. Semester	2 + 2	3.0	8.0

Prerequisites	None
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Language of Instruction	Turkish
Course Level	Bachelor's Degree (First Cycle)
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Sezgin AYGÜN
Instructors	
Assistants	
Course Objectives	This course aims to help students gain basic relativity and cosmology information.
Course Content	Relativity and the reference system concept, Galileo and Lorentz transformations and their properties, Four-vector concept and properties, Tensor concept and properties, Space-time concept structures and metrics, Minkowski space-time geometry, Riemannian geometry, Space-time metric structures and geometry relations, Tensor concept, Energy-momentum tensor and its properties, Field equations, The concept of Cosmology and some cosmological models, Geodesic equations, Some forms of cosmic matter
Course Learning Outcomes	1) Learning the basic concepts and correlating the relations between these concepts 2) Ability to use information acquired in other subjects to gain 3) to learn relativity theory. 4) to learn knowledge about cosmology

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Relativity and the reference system concept.	Oral lectures Homeworks, discussions	
2. Week	Galileo and Lorentz transformations and their properties.	Oral lectures Homeworks, discussions	
3. Week	Four-vector concept and properties.	Oral lectures Homeworks, discussions	

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
- TYİÇ

Course Information

- Course Information
- Weekly Course Content
- Resources
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

4. Week	Tensor concept and properties.	Oral lectures Homeworks, discussions	
5. Week	Space-time concept structures and meri.	Oral lectures Homeworks, discussions	
6. Week	Minkowski space-time geometry.	Oral lectures Homeworks, discussions	
7. Week	Riemannian geometry.	Oral lectures Homeworks, discussions	
8. Week	Space-time metric structures and geometry relations.	Oral lectures Homeworks, discussions	
9. Week	Tensor concept	Oral lectures Homeworks, discussions	
10. Week	Energy-momentum tensor and its properties.	Oral lectures Homeworks, discussions	
11. Week	Field equations.	Oral lectures Homeworks, discussions	
12. Week	The concept of Cosmology and some cosmological models.	Oral lectures Homeworks, discussions	
13. Week	Geodezik equations.	Oral lectures Homeworks, discussions	
14. Week	Some forms of cosmic matter	Oral lectures Homeworks, discussions	
15. Week	repetition of the general period	Oral lectures with interactive discussions, Applications	
16. Week	repetition of the general period	Oral lectures with interactive discussions, Applications	

RESOURCES

Recommended Sources
Weinberg, S., (1972). Gravitation and Cosmology: Principles and Applications of The General Theory of Relativity. Jhon Wiley & Sons Publishing.
Peacock, J.A., (2000). Cosmological Physics. Cambridge Univ. Pres
Wald, R. M., (1984). General Relativity. Univ. Of Chicago Press.

ASSESSMENT

Measurement and Evaluation Methods and Techniques
midterm exam, assignments, final exam

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	Contribution Level			
		DK1	DK2	DK3	DK4
PY1	5	5	5	0	0
PY2	4	4	4	0	0
PY3	3	3	3	0	0
PY4	3	3	3	0	0
PY5	4	4	4	0	0
PY6	4	4	4	0	0
PY7	2	2	2	0	0
PY8	2	2	2	0	0
PY9	3	3	3	0	0
PY10	4	4	4	0	0
PY11	2	2	2	0	0
PY12	2	2	2	0	0
PY13	4	4	4	0	0
PY14	3	3	3	0	0
PY15	4	5	4	4	4

*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	4	56
Final Exam Preparation	1	18	18
Mid Term Exam Preparation	1	18	18
Assignment 1	16	2	32
Application/Practice	16	2	32
Further Study	11	1	11
Preliminary Study	1	25	25
Assignment 2	2	4	8
Mid Term Exam 1	1	2	2
Final Exam	1	2	2
Total Workload			204
Total Workload / 25.5 (s)			8.00
ECTS Credit of the Course			8