Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Quantum Cosmology	FZ-6010		3 + 0	3.0	7.5

Prerequisites	None
Language of Instruction	Turkish
Course Level	Third Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Sezgin AYGÜN
Instructors	Prof. Dr. İhsan YILMAZ Prof. Dr. İsmail TARHAN Assist. Prof. Dr. Melis ULU DOĞRU Assist. Prof. Dr. Sezgin AYGÜN
Assistants	
Course Objectives	Learn the concepts of quantum and cosmology together.
Course Content	Gauge theory Gauge theory functional integral formulation functional integral formulation systematic of normalization, systematic of normalization and symmetries systematic of normalization and symmetries normalization groups and Non-Abelian gauge theories , Non-Abelian gauge theories and their quantization quantum chromodynamics quantum chromodynamics anomalies gauge theories of self symmetrical breakings gauge theories of self symmetrical breakings
Course Learning Outcomes	1) to obtain information Gauge theory and functional integral formulation 2) to learn self symmetrical breakings and gauge theories 3) to obtain information about systematic of normalization, normalization and symmetries, 4) to learn the Einstein field equations and their applications.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Gauge theory	Oral lectures Homeworks	
2. Week	Gauge theory	Oral lectures Homeworks, discussions	
3. Week	functional integral formulation	Oral lectures	

Quick Access

Physics (PhD)
- 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

		Homeworks, discussions	
4. Week	functional integral formulation	Oral lectures Homeworks, discussions	
5. Week	systematic of normalization,	Oral lectures Homeworks, discussions	
6. Week	systematic of normalization and symmetries	Oral lectures Homeworks, discussions	
7. Week	systematic of normalization and symmetries	Oral lectures Homeworks, discussions	
8. Week	normalization groups and Non-Abelian gauge theories	Oral lectures Homeworks, discussions	
9. Week	Non-Abelian gauge theories and their quantization	Oral lectures Homeworks, discussions	
10. Week	quantum chromodynamics	Oral lectures Homeworks, discussions	
11. Week	quantum chromodynamics	Oral lectures Homeworks, discussions	
12. Week	anomalies	Oral lectures Homeworks, discussions	
13. Week	gauge theories of self symmetrical breakings	Oral lectures Homework, discussions	
14. Week	gauge theories of self symmetrical breakings	Oral lectures Homework, discussions	
15. Week	General review	Oral lectures Homework, discussions	
16. Week	General review	Oral lectures Homework, discussions	

RESOURCES

Recommended Sources
Weinberg, S. Quantum Field Theory, Vols. I to III,(2000), Cambridge University Press: Cambridge, UK.
Sean Carroll, Spacetime and Geometry, An Introduction to General Relativity, (2003) ISBN-10: 0805387323
Landau L.D., Lifshitz E.M, The Classical Theory of the Fields .(1975), vol. 2, Pergamon Pres.

ASSESSMENT

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

COURSE CATEGORY

Course Category	Percentage
Support Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

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

*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	20	20
Further Study	6	2	12
Assignment 1	16	3	48
Presentation/Seminar	6	2	12
Mid Term Exam Preparation	1	20	20
Preliminary Study	14	2	28
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