Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Big Bang Theory And Nucleosynthesis	FZ5035		3 + 0	3.0	7.5

Prerequisites	None
Language of Instruction	Turkish
Course Level	Second Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. İsmail TARHAN
Instructors	Prof. Dr. İsmail TARHAN Prof. Dr. İhsan YILMAZ
Assistants	
Course Objectives	The main objective of this course is discussed examinations of the Big Bang cosmological model which explain the formation of the universe from extreme dense and hot point approximately 14 billion years ago and in the framework of this theory, examining the nucleosynthesis process and their consequences
Course Content	The main topics of the course intent are Big-Bang Theory and its fundamental concepts, observational basis, birth and evolution of universe, nucleosynthesis processes, primitive matter formation, phase transitions of universe and basic interactions, phase transitions of universe and basic interactions, formation and annihilation of particles, cosmic plasma structures, their effects on the evolution of universe, observational evidence for big bang theory, eature and problems about big bang, alternative cosmological models to big bang, alternative cosmological models to big bang,
Course Learning Outcomes	1) Explain the early time of the universe 2) Describe phase transitions occurred during universe evolution 3) Write physical and chemical process during these phase transitions of the universe 4) Interpret cosmological models explaning the evolution of the universe.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Big-Bang Theory and its fundamental concepts	Oral lectures with interactive discussions, research, homework	
2. Week	Observational basis	Oral lectures with	

Quick Access

Physics (Master)
- 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

		interactive discussions, research, homework	
3. Week	Birth and evolution of universe	Oral lectures with interactive discussions, research, homework	
4. Week	Nucleosynthesis processes	Oral lectures with interactive discussions, research, homework,	
5. Week	Primitive matter formation	Oral lectures with interactive discussions, research, homework,	
6. Week	Phase transitions of universe and basic interactions	Oral lectures with interactive discussions, research, homework,	
7. Week	Phase transitions of universe and basic interactions	Oral lectures with interactive discussions, research, homework,	
8. Week	Midterm Examination	Oral lectures with interactive discussions, research, homework,	
9. Week	Formation and annihilation of particles	Oral lectures with interactive discussions, research, homework,	
10. Week	Cosmic plasma structures	Oral lectures with interactive discussions, research, homework,	
11. Week	Their effects on the evolution of universe.	Oral lectures with interactive discussions, research, homework,	
12. Week	Observational evidence for big bang theory	Oral lectures with interactive discussions, research, homework	
13. Week	Feature and problems about big bang	Oral lectures with interactive discussions, research, homework,	
14. Week	Alternative cosmological models to big bang	Oral lectures with interactive discussions, research, homework,	
15. Week	Alternative cosmological models to big bang	Oral lectures with interactive discussions, research, homework,	

16. Week	Final exam	Exam	

RESOURCES

Recommended Sources
J.Allday(2002), Quarks, Leptons and the Big Bang, IOP Publishing Ltd.
B. E. J. Pagel (2009), Nucleosynthesis and Chemical Evolution of Galaxies, Cambridge University Press
J. A. Peacock(1999), Cosmological Physics Cambridge University Pres
S. Weinberg(1993), The First Three Minutes: A Modern View of the Origin of the Universe, Basic Books

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Mid-term exam + Assignment + Research & Project and Presentation 40%, Final Exam 60%

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	4	5	3	4	3
PY2	5	5	5	5	4
PY3	4	4	3	4	4
PY4	4	4	4	5	4
PY5	5	5	5	4	4
PY6	5	4	5	5	5
PY7	5	5	5	5	4
PY8	4	4	3	4	4
PY9	5	5	5	5	4
PY10	4	5	4	4	4
PY11	4	4	4	4	3
PY12	4	4	4	4	3
PY13	5	4	5	5	5
PY14	4	4	4	4	3
PY15	3	4	3	3	2

*DK = Course's Contrubution.

	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)
Final Exam	1	3	3

Presentation/Seminar	1	3	3
Assignment 1	3	5	15
Final Exam Preparation	1	10	10
Further Study	10	7	70
Research&Project	1	6	6
Mid Term Exam Preparation	1	10	10
Mid Term Exam 1	1	3	3
Preliminary Study	10	3	30
Class Hours (14 weeks)	14	3	42
		Total Workload	192
		Total Workload / 25.5 (s)	7.53
		ECTS Credit of the Course	8