Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
X-Ray Astronomy I	FZ5057		3 + 0	3.0	7.5

Prerequisites	None

Language of Instruction	English
Course Level	Second Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assist. Prof. Dr. Gülnur GÜN
Instructors	Assist. Prof. Dr. Gülnur GÜN
Assistants	
Course Objectives	The aim of this course is to give the knowledge about the observations of various space objects and their properties in X-rays.
Course Content	This course includes the knowledge about the X-ray sky, the galactic X-ray astronomy, the supernova remnants; the corona of the active stars; the early type stars; the normal galaxies; the massive x-ray binaries; the low mass X-ray binaries; X ray binaries in globular clusters; the cataclysmic variable stars; the extragalactic X-ray astronomy, the active glactic nuclei; the clusters of the galaxies.
Course Learning Outcomes	1) Define the X-ray sky 2) Define the celestial sources which are X-ray sources. 3) Explain how the X-rays are emerged and radiated from different celestial X-ray sources. 4) Compare the properties of strong and weak X-ray sources. 5) Interpret how big optical telescopes can observe the X-ray sources according to their optical radiation strength.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	The X-ray sky	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
2. Week	The general description of X rays	(Face to face lecture and the	

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
- Assessment
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

		relevant part of the course materials is studied by the students)Lecture	
3. Week	The galactic X-ray astronomy	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
4. Week	The supernova remnants	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
5. Week	The corona of the active stars	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
6. Week	The early type stars	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
7. Week	The normal galaxies	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
8. Week	Midterm exam	(Written or test exam)Lecture	
9. Week	The massive X-ray binaries	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
10. Week	The low mass X-ray binaries	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
11. Week	The X ray binaries in globular clusters	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
12. Week	Cataclysmic variables	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
13. Week	The extragalactic X-ray astronomy	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
14. Week	The active glactic nuclei	(Face to face lecture and the relevant part of the course materials is	

		studied by the students)Lecture	
15. Week	The clusters of galaxies	(Face to face lecture and the relevant part of the course materials is studied by the students)Lecture	
16. Week	Final exam	(Written or text exam)Lecture	

RESOURCES

Recommended Sources
-Seward, F.D., Charles, P.A., 2010, Exploring the X-ray Universe, Cambridge University Pres.
-Editors : Fabian, A.C., Pounds, K.A., and Blandford, R.D. : 2004, Frontiers of X-Ray Astronomy, Cambridge University Press.
-Schlegel, E.M., 2002, The Restless Universe,Oxford University Press

ASSESSMENT

Measurement and Evaluation Methods and Techniques		
Midterm exam + Assignment1 + Assignment2 (40 %), Final exam (60 %). The rates below are wrong but the computer programme does not allow to make any changing.		
In-Term Studies	**Quantity**	**Percentage**
Mid Term Exam 1	1	20
Assignment 1	1	25
Assignment 2	1	25
Total	3	70
End-Term Studies	**Quantity**	**Percentage**
Final Exam	1	30
Total	1	30
Contribution Of In-Term Studies To Overall Grade		70
End-Term Studies		30
Total		100

COURSE CATEGORY

Course Category	Percentage
Area of pecialization Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
PY1	5	5	5	5	5	5
PY2	5	5	5	5	5	5
PY3	5	5	5	5	5	5
PY4	5	5	5	5	5	5
PY5	5	5	5	5	5	5
PY6	5	5	5	5	5	5

PY7	5	5	5	5	5	5
PY8	5	5	5	5	5	5
PY9	5	5	5	5	5	5
PY10	4	4	4	4	4	4
PY11	5	5	5	5	5	5
PY12	5	5	5	5	5	5
PY13	5	5	5	5	5	5
PY14	5	5	5	5	5	5
PY15	5	5	5	5	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)
Final Exam	1	2	2
Mid Term Exam 1	1	1	1
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	17.25	17.25
Mid Term Exam Preparation	1	15	15
Preliminary Study	14	6	84
Assignment 1	1	15	15
Assignment 2	1	15	15
		Total Workload	191.25
		Total Workload / 25.5 (s)	7.50
		ECTS Credit of the Course	8