Fizik Bölümü / PHYSICS /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
FZK-3012	Fundamental High Energy Astrophysics	3.00	0.00	0.00	3.00	6.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Optional
Preconditions	:	Not
Objectives of the Course	:	This course is an introduction to high energy astrophysics. The aim of the course is to give the knowledge about cosmic particles, gamma rays, neutrinos, the radio waves etc and the celestial objects which radiates in these types of spectrum.
Course Contents	:	What is high energy astrophysics?, The cosmic rays- I, The cosmic rays – II, The cosmic rays – III, Ultraviolet radiation, The celestial objects that are emitted UV and their properties. ,X-ray radiation- I, The celestial objects that are emitted X-ray radiation and their properties., Gamma ray radiation, The celestial objects that are emitted Gamma ray radiation and their properties.The neutrinos –I, The neutrinos –II, Radio waves, The celestial objects that are emitted radio waves and their properties.
Recommended or Required Reading	:	1- Longair, M.S.:1992, High Energy Astrophysics, Second Edition, Volume 1, Cambridge University Press. 2- Weekes, T.C. : 1980, High Energy Astrophysics, Chapman and Hall Limited. 3- Editors : Fabian, A.C., Pounds, K.A., and Blandford, R.D. : 2004, Frontiers of X-Ray Astronomy, Cambridge University Press. 4- Editors : Lehy, D.A., Hicks, R.B., and Venkatesan, D. : 1994, Proceedings of the XXIII International Cosmic Ray Conference, World Scientific Publishing Co. Pte.Ltd 5- Cordova, F.A. : 1988, Multiwavelength Astrophysics, Cambridge University Press.
Planned Learning Activities and Teaching Methods	:	-
Recommended Optional Programme Components	:	-
Instructors	:	Assoc. Prof. Dr. Filiz Kahraman Aliçavuş
Instructor's Assistants	:	-
Presentation Of Course	:	face to face or with teams programme.

Course Outcomes

Upon the completion of this course a student :

1 Answer the question what the high energy astrophysics is.

2 Analyse the cosmic rays, neutrinos and their relations.

3 Explain the ultraviolet radiation, X-rays, gamma rays and the objects emit these radiations in universe

4 Compare the ultraviolet radiation, X-rays, gamma rays and the objects emit these radiations in universe.

5 Explain what Ultraviolet radiation, X-rays, Gamma rays and radio waves are.

Preconditions

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS

Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods
1.Week	*What is High Energy Astrophysics ?				
2.Week	*Cosmic Rays-1				
3.Week	*Cosmic Rays-II				
4.Week	*Cosmic Rays-III				
5.Week	*Ultraviolet Radiation				
6.Week	*The celestial objects that are emitted UV and their properties.				
7.Week	*X-Ray Radiation				
8.Week	*The celestial objects that are emitted X-ray radiation and their properties.				
9.Week	*Gama ışını radyasyonu				
10.Week	*The celestial objects that are emitted Gamma ray radiation and their properties.				
11.Week	*Neutrinos - I				
12.Week	*Neutrinos - II				
13.Week	*Radio Waves				
14.Week	*The celestial objects that are emitted radio waves and their properties.				

Assesment Methods %

1 Mid Term Exam 1 : 30.000

2 Final : 60.000

3 Ödev : 10.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	1.00	1.00
Ödev	14	4.00	56.00
Final Exam	1	2.00	2.00
Class Hours (14 weeks)	14	4.00	56.00
Final Exam Preparation	1	0.00	0.00
Mid Term Exam Preparation	1	7.00	7.00
Further Study	14	2.00	28.00
Preliminary Study	14	1.00	14.00
		Total :	164.00
		Sum of Workload / 30 (Hour) :	5
		ECTS :	6.00

Program And OutcomeRelation

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24
L.O. 1	3	4	4	1	3	5	1	5	5	5	3	3	4	2	1	0	0	0	0	0	0	0	0	0
L.O. 2	3	4	4	1	3	5	1	0	5	5	3	3	4	2	1	0	0	0	0	0	0	0	0	0
L.O. 3	3	4	4	1	3	5	1	5	5	5	3	3	4	2	1	0	0	0	0	0	0	0	0	0
L.O. 4	3	4	4	1	3	5	1	5	5	5	3	3	4	2	1	0	0	0	0	0	0	0	0	0
L.O. 5	3	4	5	1	3	5	1	5	5	5	3	3	4	2	1	0	0	0	0	0	0	0	0	0

Ders/Program Çıktıları İlişkisi

P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O. 24	P.O. 2
3	4	4	1	3	5	1	5	5	5	3	3	4	2	1	0	0	0	0	0	0	0	0	0	0