



Çanakkale Onsekiz Mart University

Education Information System

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Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Advanced Astrophysics I	FZ-6025		3 + 0	3.0	7.5

Prerequisites	None
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Language of Instruction	Turkish
Course Level	Third Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Prof. Dr. Caner ÇIÇEK
Instructors	Prof. Dr. Caner ÇIÇEK
Assistants	
Course Objectives	Gain basics of the important astrophysical processes.
Course Content	Basics of the important astrophysical processes: radiation-matter interaction, thermal and non-thermal radiation, special and general relativity, cosmology
Course Learning Outcomes	<ol style="list-style-type: none"> 1) Interpret matter-radiation interaction. 2) Identify thermal and non-thermal processes and their formation. 3) Explain the special relativity theory. 4) Explain general relativity theory. 5) Identify basic cosmological terms.

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Basic radiation laws	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
2. Week	Matter-radiation interaction	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
3. Week	Thermal radiation: blackbody and thermal bremsstrahlung radiation	Oral lectures with interactive discussions, Assignment	

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

		, Applications, Pratic, group study, reading	
4. Week	Synchrotron radiation	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
5. Week	Compton and inverse-compton scattering	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
6. Week	Investigating of celestial object emitting thermal and non-thermal radiation	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
7. Week	Investigating of celestial object emitting thermal and non-thermal radiation	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
8. Week	Midterm Exam	Writing and Oral Exam	
9. Week	Special Relativity: Postulates	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
10. Week	Lorentz transformations, doppler shifts	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
11. Week	Astrophysical Jets	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
12. Week	Basics of General Relativity	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
13. Week	Introduction to Cosmology	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
14. Week	Discussing of some papers related the course I	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
15. Week	Discussing of some papers related the course II	Oral lectures with interactive discussions, Assignment, Applications, Pratic, group study, reading	
16. Week	Final Exam	Written, oral exam	

RESOURCES

Recommended Sources

Astrophysical Process, H. Bradt, Cambridge Univesity Press, 2008

Advanced Astrophysics, N. Duric, Cambridge Univesity Press, 2004

Introduction to cosmology, M.Roos, Wiley, Chichester, 1997.

An Introduction to Modern Cosmology, Ansrew Liddle, Wiley, Chichester, 1998.

ASSESSMENT

Measurement and Evaluation Methods and Techniques

Mid-term exam (%40) , Final exam (%60)

COURSE CATEGORY

Course Category	Percentage
Core 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	0
PY2	5	5	5	5	5	0
PY3	5	5	5	5	5	0
PY4	5	5	5	5	5	0
PY5	4	4	4	4	4	0
PY6	5	5	5	5	5	0
PY7	4	4	4	4	4	0
PY8	5	5	5	5	5	0
PY9	5	5	5	5	5	0
PY10	4	4	4	4	4	0
PY11	4	4	4	4	4	0
PY12	4	4	4	4	4	0
PY13	4	4	4	4	4	0
PY14	4	4	4	4	4	0
PY15	4	4	4	4	4	0

*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)
Assignment 1	6	5	30
Assignment 2	16	3	48
Presentation/Seminar	1	1	1
Class Hours (14 weeks)	14	3	42
Mid Term Exam Preparation	1	20	20
Final Exam Preparation	1	22	22
Further Study	12	1	12

Preliminary Study	12	1	12
Mid Term Exam 1	1	2	2
Final Exam	1	2	2
Total Workload			191
Total Workload / 25.5 (s)			7.49
ECTS Credit of the Course			7