Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Spectral Astrophysics	FZ-6027		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	Assoc. Prof. Dr. Faruk SOYDUGAN
Instructors	Prof. Dr. Ahmet ERDEM Prof. Dr. Caner ÇİÇEK Assoc. Prof. Dr. Faruk SOYDUGAN
Assistants	
Course Objectives	In the lecture of spectral astrophysics, it is aimed to provide some knowledge about spectral formation and the properties of the stellar atmospheres. In addition, the students will gain some practice about how to determine basic parameters of the stellar atmospheres using the spectral data.
Course Content	The lecture consist of radiative transfer, atomic and moleculer spectra, line formation, main properties of the stellar atmosphere, long slit and echelle spectrographs and spectra, spectral data analysis, spectra of different objects in different wavelentgh regions.
Course Learning Outcomes	1) Provide the basic elements of atomic and molecular spectroscopy for the interpretation of the spectral lines of the stars and also other objects 2) Provide progress for the investigation of spectral data analysis and techniques 3) Intensify the knowledge using the discussions of the published work included spectral analysis of different astronomical sources

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Radiative transfer	Lecture	
2. Week	Formation of the spectra	Lecture	
3. Week	Atmomic and moleculer spectra	Lecture	
4. Week	Properties of the stellar atmospheres-I	Lecture, Homework,	

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

		Discussion	
5. Week	Properties of the stellar atmospheres - II	Lecture, practice	
6. Week	Spectra of the extended astronomical sources- II	Lecture, Homework, practice	
7. Week	Spectra of the extended astronomical sources -II	Lecture, practice	
8. Week	Midterm exam	Written exam	
9. Week	Investigation of the spectral data	Lecture, practice	
10. Week	Spectral analysis - I	Lecture, practice	
11. Week	Spectral Analysis - II	Lecture, practice, homework	
12. Week	Infrared spectra	Lecture	
13. Week	UV spectra	Lecture, disscussion	
14. Week	Paper - work discussion about spectral anaysis - I	Lecture, discussion	
15. Week	Paper - work discussion about spectral anaysis - II	Lecture, discussion	
16. Week	Final exam	Written exam	

RESOURCES

Recommended Sources
Astronomical Spectroscopy: An introduction to the atomic and molecular physics of astronomical spectra, J. tennyson, 2005, Imperial College Press
The Observation and Analysis of Stellar Photospheres, D. Gray, 1992, Cambridge University Press
Interpreting Astronomical Spectra D. Emerson, 1996, Willey
Lecture notes

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Mid-term exam (40 percent) and final exam (60 percent).

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 40

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3
PY1	5	5	5	5
PY2	5	5	5	5
PY3	5	5	5	5
PY4	4	4	4	4
PY5	4	4	4	4
PY6	4	4	4	4
PY7	3	3	3	3
PY8	4	4	4	4
PY9	5	5	5	5

PY10	3	3	3	3
PY11	4	4	4	4
PY12	2	2	2	2
PY13	4	4	4	4
PY14	4	4	4	4
PY15	4	4	4	4

*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	3	3
Further Study	14	3	42
Mid Term Exam Preparation	1	34	34
Final Exam Preparation	1	40	40
Mid Term Exam 1	1	3	3
Preliminary Study	14	2	28
Class Hours (14 weeks)	14	3	42
		Total Workload	192
		Total Workload / 25.5 (s)	7.53
		ECTS Credit of the Course	8