Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Advanced Magnetohydrodynamics	FZ6032		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. Hüseyin ÇAVUŞ
Instructors	Assoc. Prof. Dr. Hüseyin ÇAVUŞ
Assistants	
Course Objectives	In this course, nonlinear processes in magnetohydrodynamics and magnetohydrodynamics turbulence theory are explained.
Course Content	Magnetohydrodynamic (MHD) remindings, Fundamental MHD equations. , MHD waves, MHD instabilities, Nonlinear evolutions MHD instabilities , Nonlinear evolutions MHD instabilities , Magnetic reconnection ,Magnetic reconnection , MHD dynamo theory, MHD dynamo theory, MHD turbulence, MHD Investigation of papers previously given to students turbulence,Investigation of papers previously given to students ,
Course Learning Outcomes	1) interpret the nonlinear processes in magnetohydrodyanmics. 2) get the knowledge about magnetohydrodynamiccal turbeulence. 3) have the knowledge of magnetohydrodynamic in order to investigate an advanced level papers

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Magnetohydrodynamic (MHD) remindings	Oral lectures Homework Interactive discussions	
2. Week	Fundamental MHD equations.	Oral lectures Homework Interactive discussions	
3. Week	MHD waves	Oral lectures 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

		Interactive discussions	
4. Week	MHD instabilities	Oral lectures Homework Interactive discussions	
5. Week	Nonlinear evolutions MHD instabilities	Oral lectures Homework Interactive discussions	
6. Week	Nonlinear evolutions MHD instabilities	Oral lectures Homework Interactive discussions	
7. Week	Magnetic reconnection	Oral lectures Homework Interactive discussions	
8. Week	Magnetic reconnection	Oral lectures Homework Interactive discussions	
9. Week	MHD dynamo theory	Oral lectures Homework Interactive discussions	
10. Week	MHD dynamo theory	Oral lectures Homework Interactive discussions	
11. Week	MHD turbulence	Oral lectures Homework Interactive discussions	
12. Week	MHD turbulence	Oral lectures Homework Interactive discussions	
13. Week	Investigation of papers previously given to students	Oral lectures Homework Interactive discussions	
14. Week	Investigation of papers previously given to students	Oral lectures Homework Interactive discussions	
15. Week	General Review	Oral Lectures	
16. Week	Final Exam	Written Exam	

RESOURCES

Recommended Sources
D. Biskamp, 1993, Nonlinear Magnetohydrodynamics, Cambridge Monographs
R. Moreau, 1990, Magnetohydrodynamics, Kluwer Academic Publishing.
A.R., Choudhuri, 1998, The Physics of Fluids and Plasmas, Cambridge University Press

ASSESSMENT

Measurement and Evaluation Methods and Techniques
40% Mid Term Exam 60% Final Exam

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3
PY1	5	5	5	5
PY2	4	4	3	5
PY3	4	4	4	4
PY4	3	3	4	3
PY5	3	3	3	3
PY6	5	5	5	5
PY7	4	4	4	4
PY8	3	3	3	3
PY9	3	3	3	3
PY10	3	3	3	3
PY11	3	3	3	3
PY12	4	4	4	4
PY13	4	4	4	4
PY14	4	4	4	4
PY15	3	3	3	3

*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)
Research&Project	2	16	32
Presentation/Seminar	2	2	4
Final Exam Preparation	1	25	25
Further Study	14	2	28
Preliminary Study	14	1	14
Mid Term Exam Preparation	1	21	21
Class Hours (14 weeks)	14	3	42
Mid Term Exam 1	1	3	3
Assignment 1	1	10	10
Assignment 2	1	10	10
Final Exam	1	3	3
		Total Workload	192
		Total Workload / 25.5 (s)	7.53
		ECTS Credit of the Course	8