Course Information								
Course Code	**T**	**P**	**L**	**C**	**ECTS**	**Type** C/E	**Language** TR/ENG etc.	**Year/Semester**
FİZ4018	**3**	**0**	**0**	**3**	**5**	**E**	**TR**	**4/SPRING**
Course Name (Turkish**)**	Plazma Dalgalarına Giriş							
Course Name (English**)**	Introduction to Plasma Waves							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	Teaching the effect of ionosphere plasma and Earth magnetic field on the propagation of electromagnetic waves. Teaching plasma waves
Course Outline	Introduction of electromagnetic wave, introduction of plasma, introduction of ionosphere, introduction of electromagnetic mountain Study of motion in the ionic sphere
Textbook/ Material / Resources	1. Plasma Waves, D.G.Swanson, Academic Press, İnc. 2. Cold Plasma Waves, H.G. Booler, Martinus Nijhoff Publishers
Internship Status	No

Course Precedents

University Name	**Program Name**	**Course Name**	**T-P-L-C; ECTS**	**Type**

The instructor who proposed the course (Title, Name and Surname)	*Signature*
Instructors who can teach the course (Title, Name and Surname)	*Signature*

Academic justification for the opening of the course? (The effect of course outcomes on program outcomes, etc.)

Brief explanation of the course (theoretical lecture, applications, laboratory, studio, off-campus activity, using software, etc.)

Face-to-face courses will be taught under the supervision of the relevant faculty member.

External Stakeholder Opinions About the Course (It is expected that the opinions to be obtained from the business world that will employ your graduates or from real or legal persons outside the University who have expertise on the subject of the course will be specified. Proof documents must be attached to this form.)

Stakeholder Name	**Opinion** (It should be given as a summary, it should not exceed two lines.)

Weekly Course Content Distribution		
Week	**Theory**	**Application/Laboratory**
1	Introduction of electromagnetic wave and its propagation and damping in a medium	
2	Introduction and characteristics of plasma	
3	Introduction and characteristics of the ionosphere	
4	Obtaining the wave equation	
5	Obtaining the conductivity tensor for the ionosphere medium (if there is no magnetic field in the medium)	
6	Obtaining the conductivity tensor for the ionosphere medium (if there is a magnetic field in the medium)	
7	Solving the wave equation (if there is no magnetic field in the medium). Study of the ordinarial wave	
8	Solving the wave equation (if there is a magnetic field in the medium). Ordinary, extraordinari, obtaining and studying right and left polarized waves	
9	Midterm Exam	
10	Ordinary, extraordinari, study of the reflection and resonance conditions of waves polarized to the right and left from the ionosphere.	
11	Ordinary, extraordinari, study of the reflection and resonance conditions of waves polarized to the right and left from the ionosphere.	
12	Studying polarization	
13	Investigation of the damping of electromagnetic waves as they travel through the ionosphere	
14	Effect of the inclination of the earth's magnetic field on wave propagation	
15	Final Exam	
16		

Assessment			
Evaluation Criteria	**Activity**	**Custom**	**Contribution to Success Grade (%)**
	Midterm Exams	1	40
	Quizzes		
	Assignments		
	Projects		
	Term Paper		
	Laboratory		
	Other		
	Final Exam	1	60
		Sum:	100
Remarks			

Content Design and Subject Weight (%)	Mathematics and Basic Sciences	100
	Engineering Sciences	
	Social Sciences	
	Health Sciences	
	Educational Sciences	
	Culture and Art Sciences	
	Design Information	

Workload (ECTS) Calculation			
Events	**Number**	**Duration (Hours)**	**Total workload (Hours)**
Fieldwork			
Midterm Exam Application	1	2	2
Self-Study (including pre-class and exam preparation)	14	2	28
Make-up Exam	1	2	2
Experiment and Observation			
Class Participation (Theory)	14	3	42
Homework			
Final Exam Practice	1	2	2
Laboratory			
Article Review			
Writing an Article			
Reading			
Case Study			
Performance			
Problem Solution			
Project Preparation			
Project Submission			
Quiz			
Report Preparation			
Submitting Reports			
Role/Drama Work			
Seminar			
Oral Exam			
Team/Group Work	12	3	36
Argument	14	1	14
Application/Practice			
Other			
TOTAL WORKLOAD:			**126**
ECTS CREDİTS OF THE COURSE: *(The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)*			**5**

	Program Outcomes (PO) / **Learning Outcomes (LO)** *(Course Outcomes)*	1	2	3	4	5	6	7	8	9	10	11
1	Have knowledge and comment on the behavior of electromagnetic waves	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**
2	Can solve the wave equation in the presence and absence of magnetic field	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**
3	Have knowledge about the ionosphere	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**

Organizer: Prof. Dr. Ali YEŞİL
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