Course Information								
Course Code	**T**	**P**	**L**	**C**	**ECTS**	**Type** C/E	**Language** TR/ENG etc.	**Year/Semester**
FİZ4004	**3**	**0**	**0**	**3**	**3**	**C**	**TR**	**4/SPRING**
Course Name (Turkish**)**	Elektrofotonik							
Course Name (English**)**	Electrofotonic							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	This course aims to teach students an introduction to photonics, Lasers, Optical Communications, Optical Sensors and Photonic Integrated Circuits, Photonics and light-matter interactions, To develop the ability to formulate and analyze problems related to Photonic structures/processes, and to understand the processes that help to manipulate Photonics and the basic properties of light.
Course Outline	Introduction to phonetics, basic properties of light, geometric and physical optics. Basic definitions of photons and photons, polarization and diffraction of light. Reflection and diffraction as beams and waves from flat and curved surfaces. Optical communication, photonics and light-matter interactions, interfacial waves, Bragg mirrors, photonic materials, photolithography techniques, MEMS technology. Optical and photonic devices, optical sensors, photonic integrated circuits
Textbook/ Material / Resources	Photonics, An Introduction, Georg A. Reider, Springer Photonics, Volume 1: Fundamentals of Photonics and Physics, David L. Andrews, Willey Publisher
Internship Status	No

Course Precedents				
University Name	**Program Name**	**Course Name**	**T-P-L-C; ECTS**	**Type**
Gazi University	**Department of Photonics**	**Introduction to Photonics**	**3-3-0; 5**	
Izmir Institute of Technology	**Department of Photonics**	**Introduction to Photonics**	**3-3-0; 5**	

The instructor who suggested the course to be opened Prof. Fahrettin YAKUPHANOĞLU, MD	*Signature*
Instructors who can teach the course (Title, Name and Surname)	*Signature*
Prof. Fahrettin YAKUPHANOĞLU, MD	

Academic justification for the opening of the course? (The effect of course outcomes on program outcomes, etc.)
Photonic technology 21. It will take a larger place in electronic technology in the century and will take part in the production of high-tech devices and machines. ; Therefore, the theoretical and practical knowledge necessary for the production of new photonic devices will be needed. It will contribute significantly to the training of the personnel who will produce in photonics technology.

Brief explanation of the course (theoretical lecture, applications, laboratory, studio, off-campus activity, using software, etc.)
The course will be taught with theoretical and laboratory applications.

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.)

Electronics Factories	

Weekly Course Content Distribution		
Week	**Theory**	**Application/Laboratory**
1	Introduction to photonics,	
2	The main characteristics of light	
3	Geometric and Physical optics	
4	Basic definitions of photons and photons	
5	Polarization and diffraction of light	
6	Reflection and diffraction as beams and waves from flat and curved surfaces.	
7	Optical Communications	
8	Photonics and light-matter interactions	
9	Midterm Exam	
10	Interface waves, Bragg mirrors	
11	Photonic Materials	
11	Photolithography techniques, MEMS technology	
13	Optical and Photonic Devices, Optical Sensors	
14	Photonic Integrated Circuits	
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	%60
	Engineering Sciences	%40
	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	1	1
Self-Study (including pre-class and exam preparation)	10	3	30
Make-up Exam	1	1	1
Experiment and Observation			
Class Participation (Theory)	14	3	42
Homework			
Final Exam Practice	1	1	1
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			
Argument			
Application/Practice			
Other			
TOTAL WORKLOAD:			**75**
ECTS CREDİTS OF THE COURSE: *(The number obtained as a result of Total Workload/25 is calculated by rounding to the whole number.)*			**3**

The Relationship Between Course Learning Outcomes and Program Outcomes												
Program Outcomes (PO) / **Learning Outcomes (LO)** *(Course Outcomes)*		1	2	3	4	5	6	7	8	9	10	11
1	Recognize basic photonics systems.	**5**	**4**	**4**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**
2	Know the basic properties of light.	**5**	**4**	**4**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**
3	Gains the ability to solve problems with light.	**5**	**5**	**5**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**
4	Knows the techniques used in photonic systems.	**5**	**5**	**5**	**4**	**5**	**5**	**5**	**4**	**5**	**3**	**4**
5	Know the media required for photonics and the basics of photonics.	**5**	**5**	**5**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**
6	Know the basics of photonic applications.	**5**	**5**	**5**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**
7	Recognizes software used in photonic applications.	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**4**	**5**	**3**	**4**
8	Makes the necessary definitions to solve problems in the photonics process.	**5**	**5**	**5**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**
9	Knows the solution methods required for the solution of photonics problems.	**5**	**5**	**5**	**4**	**4**	**5**	**5**	**4**	**5**	**3**	**4**

Organizer: Prof. Dr. Fahrettin YAKUPHANOĞLU
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