

Course Information								
Course Code	T	P	L	C	ECTS	Type C/E	Language TR/ENG etc.	Year/Semester
FİZ4014	3	0	0	3	5	E	TR	4/SPRING
Course Name (Turkish)	Fizikte Bilgisayar Uygulamaları							
Course Name (English)	Computer Applications in Physics							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	To be able to solve scientific and complex problems with computer support It aims to be able to use the Fortran programming language Using Numerical Analysis
Course Outline	New Developments in Computing Systems Algorithms, Flow Diagrams, Fortran Language, Numerical Analysis and Its Application to Fundamental Physics Problems
Textbook/ Material / Resources	1. Computer Programming and Fortran 77: Assoc.Prof.Dr. Mustafa AYTAÇ and Assist.Prof.Dr. H. Kemal SEZEN, Beta Publishing. 6th Edition 1999, Istanbul. 2. Computational Physics, Bekir KARAOĞLU, Seyir Publishing, 2004, Istanbul
Internship Status	No

Course Precedents				
University Name	Program Name	Course Name	T-P-L-C; ECTS	Type
Gebze Technical University	Physics	Computer Applications in Physics	3-0-0-3; 5	C
Harran University	Physics	Computer Applications in Physics-I	2-2-0-3; 4	C
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	Advances in Computing Systems	
2	Introduction to Programming, Algorithms and Flow Diagrams	
3	Introduction to Fortran Programming Language and Idioms	
4	Working with Subprograms and Disk Files	
5	Advanced Programming	
6	Introduction to Numerical Analysis, Iterative Solutions, Finding Roots of Equations	
7	Numerical Differentiation, Numerical Integration, Interpolation	
8	Level 1 Calculations: Calculations for Univariate Functions	
9	Midterm Exam	
10	Level 2 Calculations: Matrices	
11	Level 3 Calculations: Use of subprograms and Files	
12	Level 4 Calculations: From Data Files to Graph drawing	
13	Graphic analysis and applications on computer, 5. Level Calculations: Finding the root	
14	Level 5 Calculations: Interpolation, Level 5 Calculations: Integration and Simulation	
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	80
	Engineering Sciences	20
	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 CREDITS 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)		1	2	3	4	5	6	7	8	9	10	11
		1	2	3	4	5	6	7	8	9	10	11
1	To be able to develop computer code for the solution of scientific and technological problems	5	5	5	5	5	3	4	5	5	3	3
2	Ability to perform computer simulations based on numerical modeling	5	5	5	5	5	3	4	5	5	3	3
3	Ability to create databases and perform statistical modeling of data	5	5	5	5	5	3	4	5	5	3	3

Organizer: Prof. Dr. Soner ÖZGEN

Preparation Date: 20.05.2024