Course Information								
Course Code	**T**	**P**	**L**	**C**	**ECTS**	**Type** C/E	**Language** TR/ENG etc.	**Year/Semester**
FİZ3007	**3**	**0**	**0**	**3**	**5**	**E**	**TR**	**3/FALL**
Course Name (Turkish**)**	**Fizikte Matematiksel Metotlar**							
Course Name (English**)**	**Mathematics methods in Physics**							

Unit/Program	Physics Department/Undergraduate Program
Course Prerequisite	No
Course Objectives	To provide students with the ability to analyze complex functions in various fields of physics and engineering mathematics and more complex problems that they will encounter in future courses
Course Outline	Vectors, Differential Vector Calculus, Vector Integration, Coordinate Systems, Matrices and Determinants, Eigenvalues and Eigenvectors, Tensor Analysis, Series, Residue Calculus
Textbook/ Material / Resources	1. George Arfken "*Mathematical Methods for Physicists*", Miami Univ. Oxford, Academic Pres Inc., 1985. 2. Erwin Kreyszig, "*Advanced Engineering Mathematics*", John Wiley and Sons Inc, 8th Edition, 1999. 3. Coşkun Önem, "Mathematics Methods in Physics", Birsen Publishing House, 1999.
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.)

It will be taught using effective face-to-face learning methods with students

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	Coordinate systems	
2	Vectors	
3	Scalar and Vector Fields Differential Vector Calculus (Gradient, Divergence, Rotational)	
4	Vector Integration (Line Integral, Surface and Volume Integrals), Integral Theorems (Divergence, Green, Stokes Theorem)	
5	Perpendicular curvilinear coordinate systems	
6	Abstract vector spaces, processors	
7	Matrices and Determinants	
8	Eigenvalues and Eigenvectors of Matrices	
9	Midterm Exam	
10	Tensor Analysis	
11	Complex Analysis	
12	Series (Taylor and Laurent)	
13	Residual Account	
14	Fourier Series	
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	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**

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	12
1	Describe mathematical methods to help them solve physics problems	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**	
2	Ability to apply coordinate transformations	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**	
3	To be able to demonstrate a mathematical approach to interdisciplinary phenomena by using the knowledge gained in the course	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**	
4	Obtaining operational information with functions of complex variables	**5**	**5**	**5**	**4**	**3**	**3**	**4**	**5**	**5**	**3**	**3**	

Organizer: Assoc. Prof. Dr. Serpil YALÇIN KUZU
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