	Course name: MATH 316 Complex Analysis	**Department:** Mathematics	Semester
YILDIRIM BEYAZIT ANKARA ÜNİVERSİTESİ			**6**

Methods of Education							Credit (ECTS)
Lecture	Recitation/ (Etud)	Lab	Exams	Homework/ Quiz	Other	Total	
56	0	0	40	0	84	180	**6**

Language	English
Compulsory/Elective	Compulsory
Prerequisites	Calculus I-II, Advanced Calculus I-II

Course Contents		
	Weeks	**Subjects**
	1	Introduction and Course Overview • Brief introduction • Course outline • Introduction to complex number system.
	2	Working with Complex numbers • Introducing Complex Variables • Operations with Complex numbers
	3	Working with Complex numbers • Conjugate and Absolute values of complex numbers, • Graphical Representation of Complex numbers
	4	Working with Complex numbers • Polar form of complex numbers • De Moivres' theorem
	5	More on Complex numbers • Definitions of some basic concepts. • Limits and continuity of functions of complex variables
	6	More on Complex numbers • Derivation of Cauchy-Riemann equations • Analytic and Harmonic functions
	7	More on Complex numbers • Analytic and Harmonic functions
	8	• Function Singularities and its types
	9	Transformation • Linear and Non-linear Transformation
	10	Transformation • Inversion and Bilinear Transformation
	11	Transformation • Conformal Mapping and Contour Integral
	12	Sequence and Series • Sequences and series of Complex numbers • Limit of sequence and series
	13	Sequence and Series • Sequences and series of Complex functions
	14	Sequence and Series • Convergence of Sequences and Series of function of Complex variables

Course Objectives	This course aims to: ▪ introduce students the Complex Number System ▪ provide necessary knowledge and skills to enable students to handle mathematical operations, analysis and problems involving complex numbers.

	Upon successful completion of this course, a student will be able to:
Learning Outcomes and Competences	1. define a function of complex variable and carry out mathematical operations of complex numbers 2. learn the conditions on the analytic and/or harmonic complex variable functions 3. state and prove Cauchy Riemann Equation 4. define singularities of a function 5. explain the concept of transformation in a linear/nonlinear complex space 6. understand the concept of sequences and series of complex numbers
Textbook and /or References	1. Introduction to Complex Analysis, H.A. Priestley, 1990, Oxford University Press, UK. 2. Complex Analysis, S. Lang, 1976, Addison Wesley Publishing Company, Ontario, Canada.

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage%
Mid-terms	1	40
Quizes	0	0
Assignments	0	0
Attendance	0	0
Practice	0	0
Project	0	0
Final Examination	1	60
Total	**2**	**100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-	14	6	84
Assignments	0	0	0
Mid-terms	1	15	15
Project	0	0	0
Final Examination	1	25	25
Total	**30**	**59**	**180**

Instructors