MINISTRY OF EDUCATION, CULTURE, RESEARCH, AND TECHNOLOGY
UNIVERSITAS NEGERI JAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
Jl. Rawamangun Muka, RT 11/RW14, Rawamangun, Pulo Gadung
East Jakarta City, Special Capital Region Of Jakarta 13220
Email: pend.mat@unj.ac.id, http: https://fmipa.unj.ac.id/penmat

Complex Variable Functions

Module designation	Complex Variable Functions
Semester(s) in which the module is taught	III (Odd Semester)
Person responsible for the module	Drs. Tri Murdiyanto, M.Si. Dr. Flavia Aurelia Hidajat, M.Pd.
Language	Indonesian Language
Relation to curriculum	Elective
Teaching methods	Teaching methods used in this course are: - Lectures (Synchronous: presentation of material, group discussions and class discussions) - Structured assignments (Asynchronous in LMS: Discussion forums discussing individual assignments and questions)
Workload (incl. contact hours, self-study hours)	For this course, students required to meet a minimum of 136 hours in one semester, which consist of 40 hours for lecture 48 hours for structured assigments 48 hours for private study
Credit points	4.5 ECTS
Required and recommended prerequisites for joining the module	• *Students must attend lectures at least 80%.* • *Complete all individual tasks.*

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Program intended learning outcomes	PLO 5: Able to master the basics of mathematical theoretical concepts, including mathematical logic, discrete mathematics, algebra, analysis and geometry as well as probability theory and statistics
	PLO 6: Mastering the principles of mathematical modeling, linear programming, differential equations, and numerical methods.

Course Learning Outcomes(CLO) to be achieved in this course are:

CLO 1 : Students can formulate concepts and theories of complex numbers.

CLO 2 : Students can formulate the concept and theory of complex numbers in polar form.

CLO 3 : Students can formulate concepts and theories of complex variable functions.

CLO 4 : Students can formulate complex function concepts and theories in polar form.

CLO 5 : Students can formulate concepts and theories of derivative functions of complex variables.

CLO 6 : Students can formulate concepts and integral functions of complex variables.

CLO 7 : Students can formulate concepts and sequences and series of complex variables.

The relationship between PLO and CLO in this course is described as follows:

CLO	PLO	
	5	6
1		
2		
3		
4		
5		
6		
7		

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Content	**Students will learn about:** Concepts and theories about complex numbers, writing forms and properties of complex numbers, De Moivre's theorem, limits, continuity, derivatives, analytic functions, harmonic functions, Euler's equations, path integrals, complex integral functions, Cauchy integrals, Cauchy-Goursat theorem, Principle of maximum modulus, sequences and series, residues and remainder theorem.
Forms of Assessment	Components and assessment weights in learning include assignments (30%), midterm test (35%), and final test (35%).
Study and examination requirements and forms of examination	**Study and examination requirements:** - Students must be present 15 minutes before the lecture begins. - absent Students, either with notification or not, more than 20% of the total meetings are considered failed. - Students are not allowed to use communication tools unrelated to learning. - Students must submit all assignments before the specified deadline. - Students must take exams to get midterm and final test scores. **Form of examination:** Forms of examination: assignments, midterm exams, and final test
Reading list	1. James W Brown, Ruel V. Churchil, Complex Variables and Aplication 8th edition, Mc Graw Hill, New York, 2003 2. MCL: mcl.math-unj.org **3.** Internet

Module Description of Bachelor in Mathematics Education