



UNIVERSITAS NEGERI JAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
CHEMISTRY STUDY PROGRAM

Jl. Rawamangun Muka, RT 11/RW 14, Rawamangun, Pulo Gadung,
East Jakarta City, Special Capital Region of Jakarta 13220
Phone/Fax: (021) 4894909, E-mail: kimia@unj.ac.id, <http://fmipa.unj.ac.id/kimia/>

Bachelor in Chemistry

MODULE HANDBOOK

Module name:	Mathematical Chemistry
Module level, if applicable:	Undergraduate
Code:	33250152
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	1 st
Module coordinator:	Dr. Afrizal, M.Si.
Lecturer(s):	Dr. Afrizal, M.Si. Dr. Hanhan Dianhar, M.Si. Dr. Darsef, M.Si Yussi Pratiwi, M.Sc
Language:	Indonesia
Classification within the curriculum:	Compulsory Courses in the first year (1 st semester) Bachelor Degree
Class Size	40
Type of Teaching	In class activity : Team Based Project and Project based Learning Structured activity : Group Discussion using Worksheet Independent activity : Individual task
Teaching format / class hours per week	Learning activity can be carried out in the form of : 1. Lecture or students response a. Face to face : 50 minutes/SKS b. Structured activity : 60 minutes/SKS c. Independent activity : 60 minutes/SKS
Workload:	1 CU (SKS) for bachelor degree equal to 4 work hours per week or 170 minutes. 3x50 minutes face to face, 3x60 minutes structured tasks, 3x60 minutes independent learning, for 16 weeks (including midterm and final examination), a total of 135,99 hours/semester.
Credit points:	3 SKS (4.5 ECTS)
Prerequisite course(s):	None



<p>Course Outcomes :</p>	<p>After taking this course the students have ability to:</p> <p>CLO1. Apply the principles of the exponential number of a number form</p> <p>CLO2. Applying logarithmic theorems, significant figures, conversion factors in cases of mathematical chemistry problems</p> <p>CLO3. Creating relationships between variables in a "functional relationship"</p> <p>CLO4. Generate the solution form of an equation of Differential Calculus</p> <p>CLO5. Generate the solution form of an Integral Calculus equation</p> <p>CLO6. Distinguish between a Taylor series and a Maclaurin series in a mathematical series</p> <p>CLO7. Examine a mathematical equation based on the principles of complex numbers</p> <p>CLO8. Differentiate the types of matrices and their solutions</p> <p>CLO9. Distinguish between Improper Integral, Double Integral, and Fractional Integral</p> <p>CLO10. Analyze the relationship of variables through a polar coordinate</p> <p>CLO11. Analyzing mathematical theorems on work and heat research, enthalpy functions, and heat capacity in the Laws of Thermodynamics</p> <p>CLO12. Analyzing the logarithm theorem for determining the pH of a solution</p> <p>CLO13. Analyze the integral theorem on the zero-order, first-order, and second-order integrated rate law concepts</p>
<p>Content</p>	<ol style="list-style-type: none"> 1. Principles exponential number 2. Logarithm, Significant figures, conversion factors 3. Functional Relationships 4. Differential Equation Calculus 5. Integral Calculus 6. Taylor series with Maclaurin Series in a row mathematics 7. Number principles complex 8. Matrix 9. Distinguish between Improper Integral, with Double Integral, and fractional integral 10. Variable relationship through a polar coordinate 11. Law of Thermodynamics 12. Enthalpy Function, Effect of Temperature On Heat Capacity 13. Logarithm of pH determination 14. Law of Rate Integrated Order Zero, Law of Rate Integrated Order One, Law of Rate Integrated Order Two.
<p>Study/exam achievements:</p>	<p>Examinations are conducted as Unit Tests. There are two-unit tests, each covers 4-5 chapters. The final marks are derived from unit tests (70%) and structured tasks (30%).</p>

