



UNIVERSITY OF LAMPUNG

FACULTY OF TEACHER TRAINING AND EDUCATION

Department of Physics Education

Jl. Prof. Dr. Soemantri Brodjonegoro No. 1 Bandar Lampung 35145

MODULE HANDBOOK

Bachelor in Physics education

Module name	Basic Mathematics
Module level	Undergraduate
Code	KIE616101
Courses	Basic Mathematics
Description	Discusses knowledge of various methods and techniques of Physics Mathematics, and can use them in various problem solving processes, related to Physics problems. This lecture discusses material on various vector matrix equations and complex numbers and their applications in Physics.
Semester	Odd
Lecturer	Dr. Kartini Herlina, M.Si.
Contact Person	+62 815-4657-4647
Language	Indonesian
Relation to curriculum	Elective
Type of teaching, contact hours	Discussion, Ask Answer Lectures, Presentation and Assignment
Workload	Contact hours: 14 weeks x 150 minutes Structured learning: 14 weeks x 180 minutes Independent study: 14 weeks x 180 minutes
Credit points	3 (3-0) CP or 4.8 (ECTS) ((14 weeks x 150 minutes) + (14 weeks x 180 minutes) + (14 weeks x 180 minutes) : 60 minutes/hour = 119 hours : 25 hours of study/ECTS = 4.8 (ECTS)
Requirements according to the Examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.

<p>Learning outcomes (course outcomes) and their corresponding PLOs</p>	<p>After completing this module, a student is expected to:</p> <ol style="list-style-type: none"> 1. KNO-1 : Demonstrate knowledge of classical physics (mechanics, electrodynamics, thermodynamics, oscillations, waves and optics) and are familiar with the fundamentals of quantum, atomic and molecular, nuclear, elementary particle and solid state physics. 2. KNO-3 : Applying Technology, Pedagogy, and Content Knowledge (TPACK) in planning, teaching, and evaluating physics learning. 3. KNO-4 : Using research methodology knowledge to solve physics education and learning problems.
<p>Competencies/ Course Learning Outcomes</p>	<ol style="list-style-type: none"> 1. Students are able to operate the real number system 2. Students are able to operate rational, irrational real numbers 3. Students are able to solve problem problems. 4. Students are able to understand and operate functions. 5. Students are able to: solve problems of function and limits. 6. Students are able to understand and be able to determine the derivatives of functions. 7. Students are able to determine the differential coefficient. 8. Students are able to complete differentials in the form of functions of a function. 9. Students are able to complete differential functions of implicit and parametric equations. 10. Students are able to solve partial differential problems. 11. Students are able to determine the differential inequality (integration) of a function. 12. Students are able to solve integral parsial and integrant problems with partial fractions. 13. Students are able to complete integrals with trigonometry. 14. Students are able to complete integrals in squared form.
<p>Contents</p>	<p>Rational and irrational real numbers, Inequality, Ineptitude with absolute value, Function operation, Composite functions, Functions and function limits, Derivatives of functions, Differential of multiplication forms, Differential of division forms, Differential function of a function x, Differential of implicit functions, Differential of parametric equations, Partial differential, Integration, Integral function of a function, Partial integral, Partial fractional integral, Integral by form $\int \frac{d_z}{A^2-z^2}$ and Integral by form $\int \frac{d_z}{z^2-A^2}$</p>

Study and examination requirements and forms of examination	Written test
Media employed	LCD, whiteboard, and online resources
Assessments and Evaluation	Participants are evaluated based on ; 1. Participation Activities (15%) 2. Presentation (15%) 3. Final Semester Exam (25%) 4. Midterm exams (25%) 5. Assignment (20%)
Reading list	Calculus and analytical geometry vol. 1 C.. J. Purce