



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	Advanced Physical Mathematics
Module level	Undergraduate
Code	KFI620201
Courses	Advanced Physical Mathematics
Description	Study of advanced mathematics that underlies the basic mathematical concepts of various advanced physical sciences and their applications. Mathematical Physics II includes discussions on calculus of variations, algebra and complex functions, Fourier functions, Laplace functions, special functions that are widely applied in various physical problems such as Hamiltonian and energy concepts, signal design analysis, Heisenberg uncertainty, RLC alternating current, wave equation ds.
Semester	Odd
Lecturer	Drs. I Dewa Putu Nyeneng, M.Sc
Contact Person	+6289514707137
Language	Indonesian
Relation to curriculum	Undergraduate degree program, Mandatory, 3rd semester
Type of teaching, contact hours	Lecture and discussion
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.
Learning outcomes (course outcomes) and their corresponding PLOs	After completing this module, a student is expected to: 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-2 : Formulate physical systems using mathematics to solve physics problems.
Competencies/ Course Learning Outcomes	1. Students are able to calculate the fourier series correctly; 2. Students are able to Understanding the concept Differential equations; 3. Students are able to Understanding the concept First-order differential equation; 4. Students are able to understand the concept of second-order differential equations; 5. Students are able to apply the concept of differential equations in advanced physics courses such as Thermodynamics and Quantum Physics; 6. Students are able to apply the concept of coordinate transformation; 7. Students are able to understand and apply beta and gamma functions; 8. Students are able to understand the differential equations of legendre polynomials; 9. Students are able to analyze the differential equations of legendre polynomials; 10. Students are able to Applying the differential equivalent of legendary polynomials.
Contents	This course will learn about fourier series, ordinary differential equations, coordinate transformations, gamma and beta functions, Solutions of polynomial differential equation series legendre
Study and examination requirements and forms of examination	Participants are evaluated based on ; 1. Participation Activities (5%) 2. Quizzes (20%) 3. Assignment (20%) 4. Final Semester Exams (30%) 5. Midterm exams (25%)

Media employed	LCD, whiteboard, and online resources
Assessments and Evaluation	Quizzes and assignments
Reading list	1. M.L.Boas, 2006,Mathematical Methods in The Physical Science, 3rd Edition. 2. Bradbury,T.C., 1984, Mathematical Method with Applications to Problems in The physical Sciences