

PHYSICS MODULE HANDBOOK - 2023

Module Description

Module Name	Electromagnetic Field Theory I
Module Level	Bachelor of Physics
Code	18H02121903
Courses (if applicable)	
Semester	Odd (4)
Person responsible for the module	Dr. Nurlaela Rauf, M.Sc
Lecturer	<ol style="list-style-type: none"> 1. Dr. Nurlaela Rauf, M.Sc 2. Drs Bangsawang, Msi
Language	Indonesian and English
Relation to Curriculum	Undergraduate program, compulsory, semester 4
Type of Teaching, Contact Hours	<p>Teaching methods: [group discussion], [case study], [collaborative learning], [problem-based learning].</p> <p>Teaching forms: [lecture]</p> <p>Schedule: Wednesday, 09.10 – 11.50</p>
Workload	<p>For this course, students are required to meet a minimum of 136.00 hours in one semester, which consist of:</p> <ul style="list-style-type: none"> - 40.00 hours for lecture, - 48.00 hours for structured assignments, - 48.00 hours for private study
Credit Points	3 Credit Points (equivalent with 5.1 ECTS)
Requirements According to the Examination Regulations	A student must have attended at least 80% of the lectures to sit on the final examination.
Mandatory Prerequisites	Basic Physics, Mathematical Physics
Module objectives/intended learning outcomes	<p>After completing the course, Students are able:</p> <p>Intended Learning Outcomes (ILO):</p> <p>ILO 1: Students have relatively deep understood in classical and basic quantum physics, in the field of electrostatic and magneto-static.</p> <p>ILO 3: Students are able to use the basic principles of physics in technology application.</p> <p>Course Learning Objective (CLO):</p> <p>After completing this course, students are expected to be able to apply the concepts of the electrostatic field and the magneto-static field.</p> <p>Sub CLO</p>

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	<p>laws of electrostatic fields, electric field potential, and the electric field properties of materials. In addition, they are expected to be able to explain the basic laws of magneto-static fields as well as induced magnetic fields.</p> <p>ILO-3 CO-2 ⇒ (five weeks): Students are able to explain electric potential and electric fields in boundary conditions, as well as the properties of magnetic materials.</p>
Content	<p>Students will learn about:</p> <ol style="list-style-type: none"> 1. Review of coordinate systems and vector analysis 2. Electric field and electric field energy 3. Electric potential 4. Electrostatic field in materials 5. Limit requirements on electric and magnetic fields 6. While magnetostatics 7. Induction magnetic field 8. Properties of magnetic materials
Forms of Assessment	<p>Assessment techniques: [participation], [written test]</p> <p>Assessment forms: [quiz], [mid-term exam], [final term exam], [assignment]</p> <p>The number of Assessment and Evaluation: Assignment 1, 2, 3, 4; Evaluation (Mid-Term, Quiz and Final-Term);</p> <p>Quiz = 20%, Mid-term exam = 30%, Assignment = 20%, Final-term exam = 30%;</p> <p>CO 1 => ILO 1: 5% (Assignment 1: case study) CO 1 => ILO 1: 5% (Assignment 2: problem set analysis) CO 1 => ILO 1: 10% (Quiz: problem set analysis) CO 1 => ILO 1: 30% (Mid-Term: written test) CO 2 => ILO 3: 10% (Quiz: problem set analysis) CO 2 => ILO 3: 5% (Assignment 3: problem set analysis) CO 2 => ILO 3: 5% (Assignment 4: problem set analysis) CO 2 => ILO 3: 30% (Final-Term: written test)</p>
Study and examination requirements and forms of examination	<p>Study and examination requirements:</p> <ul style="list-style-type: none"> - Students must attend 15 minutes before the class starts. - Students must switch off all electronic devices. - Students must inform the lecturer if they will not attend the class due to sickness, etc. - Students must submit all class assignments before the deadline.

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	Form of examination: <ul style="list-style-type: none">• Written and Quiz exam: Essay
Media Employed	LED, Whiteboard, Learning Management System (SIKOLA), WA, and/or Email.
Reading List	<u>Main:</u> <ol style="list-style-type: none">1. David J.Griffiths, 1999, <i>Introduction to Electrodynamics</i>, Prentice Hall, New Jersey, USA2. Nurlaela Rauf, 2017, Electromagnetic Field teaching materials, Department of Physics – FMIPA – Hasanuddin University3. PANOFSKY AND PHILIPS - <i>Classical Electricity and Magnetism</i>, Addison-Wesley Publishing Company <u>Supporter:</u> Books and other articles related to the electromagnetic theory of the Internet