Module Handbook

Courses	Electricity and Magnetism
Programme	S1 Physics Education
Code	
Semester	4
Group of Course Coordinator	Dr. Rudy Kustijono, M.s
Lecturers	1. Drs. Rudy Kustijono, M.S 2. Drs. Hainur Rasyid A.,M.S 3. Dr. Frida Ulfa Ermawati, M.Sc 4. Diah Hari Kusumawati, M.Si. 5. Abd. Kholiq, S.Pd, M.T.
The language used	Indonesian
Classification in the curriculum	Compulsory Courses
Learning format / number of class hours per week	Per-week consists of: 3 hours face to face (1 hour face to face = 50 minutes)
Load	3 hours face to face, 3 hours structured assignments, 3 learn to be independent per-week, for 15 weeks = a total of 135 hours face-to-face / semester
credit	3
Precondition	1. Basic Physics 2 2. Mathematical Physics 1 3. Mathematical Physics 2
Course Learning Outcome	1. Have the ability to think critically and use the right concepts to qualitatively analyze problems or situations involving physics in this case electricity and magnetism 2. Demonstrate an attitude of responsibility for work in their field of expertise independently 3. Have the ability to use physics concepts and appropriate mathematical / computational methods to get solutions of quantitative problems in solving electric magnetic problems 4. Mastering the material, structure, and concepts of physical science and its application in technology 5. Implement higher-order thinking processes (critical, creative, logical, and problem-solving) in studying physical processes and symptoms, especially magnetic electricity, both inductively and deductively 6. Using symbolic and numeric language creatively in describing the processes and symptoms of electricity and magnetism qualitatively and quantitatively
Courses content	Magnetic Electricity courses include vector analysis, gradients, divergences, curls, Stokes Theorem, electric fields, Coulomb's Law, electric fields, Gauss's Law, electric potential, Electric dipoles, multipole of electric energy, field energy density, Laplace equation and Poisson's equation, terms - boundary conditions, shadow method, variable separation method. dilectric material: polarization vector, polarizing charge, displacement vector D, Gauss's law for D. Electric current: flow of electric charge, continuity equation. Magnetic field: Lorentz force, Biot-Savart law, vector potential, Ampere's law, magnetic dipole moment, switch potential, magnetization, magnetic poles, Ampere's law for H, magnetic materials, hysteresis. Magnetic effects, displacement

<table>
<tr><td></td><td>currents, Maxwell's equations.</td></tr>
<tr><td>Attributed soft skill</td><td>scientific report
public speaking
team work</td></tr>
<tr><td>Learning achievement
(assesment)</td><td>Students are considered competent and pass if they get at least a minimum test score of 68 for mid test (SS) and final exam (S) , assignment (A), and participation (P), where the final grade (FG) is calculated following the formula:
Final Grade of the course (FG)= 20% P + 30% A + 20% SS + 30% S

Convert the 0-100 scale value to a 0-4 scale and the letters are arranged as follows:
<table>
<tr><th>Letters</th><th>Number</th><th>Interval</th></tr>
<tr><td>A</td><td>4,00</td><td>85 ≤ A < 100</td></tr>
<tr><td>A-</td><td>3,75</td><td>80 ≤ A- < 85</td></tr>
<tr><td>B+</td><td>3,50</td><td>75 ≤ B+ < 80</td></tr>
<tr><td>B</td><td>3,00</td><td>70 ≤ B < 75</td></tr>
<tr><td>B-</td><td>2,75</td><td>65 ≤ B- < 70</td></tr>
<tr><td>C+</td><td>2,50</td><td>60 ≤ C+ < 65</td></tr>
<tr><td>C</td><td>2,00</td><td>55 ≤ C < 60</td></tr>
<tr><td>D</td><td>1,00</td><td>40 ≤ D < 55</td></tr>
<tr><td>E</td><td>0,00</td><td>0 ≤ E < 40</td></tr>
</table></td></tr>
<tr><td>Media form</td><td>1. Power point file
2. e-book file</td></tr>
<tr><td>References</td><td>1. David J Griffiths, 1999, “ Introduction to Electrodynamics”, second edition, Prentice hall, International edition
2. Reitz, JR. & Milford, FJ. 1990. Foundations of Elektromagnetic Theory. Third Edition Addison-Wesley Publishing Company Reading Masschusetts MenloPark. California.
3. Mahmud Zaki, 2000, “Medan Elektromagnetik (bagian I)”, Jurusan Fisika, FMIPA, ITS</td></tr>
<tr><td>Note</td><td></td></tr>
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