Module Handbook

Courses	Wave
Programme	Undergraduate Program (S-1)/Bachelor
Code	
Semester	4
Group of Course Coordinator	Dr. Asnawi, M.Si
Lecturers	1. Dr. Titin Sunarti, M.Si 2. Dr. Asnawi, M.Si 3. Setyo Admoko, M.Pd
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 Unit	3 CU = 4.77 ECTS
Precondition	Basic Physics 1 Basic Physics 2
Course Learning Outcome	1. Have the ability to use the concept of waves and appropriate mathematical / computational methods to obtain solutions of quantitative problems in waves 2. Master the material, structure, and the concept of science and its application in the technology wave 3. Applying the principles, concepts and law of waves in the form of prototypes of science and technology products that are relevant to the needs of society 4. Implement higher-order thinking processes (critical, creative, logical and problem solving) in studying wave processes and symptoms both inductively and deductively
Courses content	Waves in a medium have more than one dimension: flat waves, water waves, wave equations and their solutions in cartesian coordinates, spherical and cylindrical, reflection and refraction, stationary waves. Transverse mechanical waves, impedance, reflection and transmission, stationary waves, dispersion, polarization, Fourier techniques, modulation. Longitudinal mechanical waves: sound waves in solids and fluids. Electromagnetic waves (EM): Maxwell's system of equations for EM fields in medium, EM waves, medium impedance, wave kinematics and energetics, dispersion linkages, Doppler effect. Propagation on the border of two medium, in waveguide, optical fiber and non-isotropic medium. Coherence, interference, diffraction (Fraunhofer and Fresnel), slit and lattice diffraction patterns, interferometry
Attributed soft skill	scientific report public speaking team work

<table>
<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. Akira Hirose, Introduction to Wave Phenomena, John Willey & Sons.Inc1985
2. Alonso M & Finn, E.I. Dasar-Dasar Fisika Untuk Universitas Jilid I. Penerbit Erlangga. Jakarta.,1992
3. Tjia May On, Gelombang, Institut teknologi bandung, 2005
4. PASCO Scientific 2011, Instruction Sheet by Pasco Scientific, 10101 Fotthills Blvd , PO Box, 619011 Roseville CA.</td></tr>
<tr><td>Note</td><td></td></tr>
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