



Bachelor Program in Geophysics

Faculty of Mathematics and Natural Sciences

HASANUDDIN UNIVERSITY

Basic Science Courses

1. Basic Physics

Module Name	:	Basic Physics
Module Level	:	Bachelor
Code, if applicable	:	23H02110703
Subtitle, if applicable	:	-
Courses, if applicable	:	Geophysics
Semester(s) in which the module is taught	:	I (First Semester)
Module coordinator(s)	:	Prof. Dr. Paulus Lobo Gareso, M.Sc
Lecturer(s)	:	Prof. Dr. Paulus Lobo Gareso, M.Sc Dr. Sri Dewi Astuty
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Compulsory course in the first year for Bachelor Degree in Geophysics
Type of teaching, contact hours	:	Lectures, < 60 students, Regular: Monday, 9.40 - 11.20 and Tuesdays, 10.30 - 12.10
Workload	:	1. Lecture: $2 \times 50 = 100$ minutes (1.6 hours) / week 2. Exercise and Assignments: $2 \times 60 = 120$ minutes (2 hours) / week 3. Private study: $2 \times 60 = 120$ minutes (2 hours) / week 4. Practice: 2.8 hours / week
Credit points	:	3 SKS (4.8 ECTS)
Requirements according to the examination regulations	:	Students are eligible to attend the examination if their absences are less than 20% of the lectures
Recommended prerequisites	:	-
Module objectives/intended learning outcomes	:	After completion of this module, students will be able to: CLO 1. Able to explain the basic properties of objects/matter in the form of physical equations related to quantities and units, particle kinematics and dynamics, and the laws of conservation of energy and momentum; CLO 2. Able to apply heat equations, thermodynamics, static electricity, electrical circuits, magnetic fields, waves, and optics to solve physics problems;



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		CLO 3. Able to interpret experimental data obtained in the laboratory to be presented in the form of a scientific report; The following is the mapping of the ILO and the CLO of this course: <table border="1"> <tr> <th></th><th>ILO 4</th><th>ILO 8</th></tr> <tr> <td>CLO 1</td><td>✓</td><td></td></tr> <tr> <td>CLO 2</td><td>✓</td><td></td></tr> <tr> <td>CLO 3</td><td></td><td>✓</td></tr> </table>		ILO 4	ILO 8	CLO 1	✓		CLO 2	✓		CLO 3		✓
	ILO 4	ILO 8												
CLO 1	✓													
CLO 2	✓													
CLO 3		✓												
Content	:	1. Quantities, Units and Measurement Basics, and Surface Tension 2. Kinematics, Newton's Laws, Viscosity, and Young's Modulus 3. Work and the Law of Conservation of Energy 4. Linear Momentum and Collisions 5. Temperature, Heat, and Newtonian Cooling 6. Kinetic theory of gases and thermodynamics 7. Static electricity 8. Electric current and circuits 9. Magnetic fields 10. Waves and the Melde method 11. Mirrors and lenses 12. Diffraction and interference												



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Study and examination requirements	Participants are marked based on their performance in theory: Case Study (50%), Quiz (10%) and Written Examination (40%). Students are marked based on their percentage of points obtained and based on the following grade scale: <table><tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversion Value</th></tr><tr><td>85 – 100</td><td>A</td><td>4.00</td></tr><tr><td>80 - <85</td><td>A-</td><td>3.75</td></tr><tr><td>75 - < 80</td><td>B+</td><td>3.5</td></tr><tr><td>70 - < 75</td><td>B</td><td>3.0</td></tr><tr><td>65 - < 70</td><td>B-</td><td>2.75</td></tr><tr><td>60 - < 65</td><td>C+</td><td>2.5</td></tr><tr><td>50 - < 60</td><td>C</td><td>2.00</td></tr><tr><td>40 - < 50</td><td>D</td><td>1.00</td></tr><tr><td>< 40</td><td>E</td><td>0.00</td></tr></table>	Percentage of Achievement	Grade	Conversion Value	85 – 100	A	4.00	80 - <85	A-	3.75	75 - < 80	B+	3.5	70 - < 75	B	3.0	65 - < 70	B-	2.75	60 - < 65	C+	2.5	50 - < 60	C	2.00	40 - < 50	D	1.00	< 40	E	0.00
Percentage of Achievement	Grade	Conversion Value																													
85 – 100	A	4.00																													
80 - <85	A-	3.75																													
75 - < 80	B+	3.5																													
70 - < 75	B	3.0																													
65 - < 70	B-	2.75																													
60 - < 65	C+	2.5																													
50 - < 60	C	2.00																													
40 - < 50	D	1.00																													
< 40	E	0.00																													
Exams and assessment formats	Lecture: - Assignment 1, 2, 3, 4 - Mid examination - Laboratory practice - Written examination (laboratory practical exam)																														
Reading list	Main References: 1. Physics Department Teaching Team, Faculty of Mathematics and Natural Sciences. (2010). <i>Basic physics 1</i> (1st ed.). Makassar. 2. Physics Department Teaching Team, Faculty of Mathematics and Natural Sciences. (2018). <i>Basic physics laboratory manual</i>. Makassar. Additional References: 1. Halliday, D., & Resnick, R. (1994). <i>Physics, Volume 1</i> (E. Sucipto & P. Silaban, Trans.). Jakarta: Erlangga.																														
Last revision date	July 1 st , 2025																														