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Undergraduate Programme in Physics

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MODULE HANDBOOK

Module Name	Geoelectrical and Electromagnetic Methods
Module level, if applicable	Bachelor
Code, if applicable	FIS425051
Subtitle, if applicable	-
Courses, if applicable	Geoelectrical and Electromagnetic Methods
Semester(s) in which the module is taught	4th (fourth)
Person responsible for the module	Dr. Thaqibul Fikri Niyartama, S.Si., M.Si
Lecturer(s)	Dr. Thaqibul Fikri Niyartama, S.Si., M.Si
Language	Indonesia
Relation to curriculum	Compulsory course in the second year (4th semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures and 180 minutes structured activities per week.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam
Credit points	3
Requirements according to the examination regulations	
Recommended prerequisites	No prerequisites stated on
Module objectives/intended learning outcomes (CPMK)	After completing this course, the students: CO 1. Able to explain mapping, sounding and tomography techniques using geoelectric and electromagnetic methods as well as qualitative interpretation of exploration problems, environmental studies, etc..; CO 2. Able to perform 1-D geoelectric data modeling and use 2-D and 3-D geoelectric data modeling software CO 3. Able to explain the working mechanism of the EM method in exploration problems, environmental studies, etc..
Content	a. The concept of Caliph Fil Ardh, the scope of Geoelectric and Electromagnetic methods b. Resistance, resistivity and apparent resistivity c. Current flow in homogeneous and heterogeneous media d. VES application, and mapping e. SP and IP methods f. Active and passive EM g. MT, GPR, VLF h. Field experiment

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<table>
<tr>
<td>Study and examination requirements and forms of examination</td>
<td>The final mark will be weighted as follows:
<table>
<tr><th>NO</th><th>Assessment methods (components, activities)</th><th>Weight (percentage)</th></tr>
<tr><td>1</td><td>Final Examination</td><td>40%</td></tr>
<tr><td>2</td><td>Mid-Term Examination</td><td>30%</td></tr>
<tr><td>3</td><td>Class Activities: Quiz, Homework, etc.</td><td>30%</td></tr>
</table>
The final assessment is expressed in the form of a letter value converted from a number value with the following categories:
<table>
<tr><th>NO</th><th>Number Value</th><th>Letter Value</th><th>NO</th><th>Number Value</th><th>Letter Value</th></tr>
<tr><td>1</td><td>≥ 95</td><td>A</td><td>7</td><td>65-69.99</td><td>B/C</td></tr>
<tr><td>2</td><td>90-94.99</td><td>A-</td><td>8</td><td>60-64.99</td><td>C+</td></tr>
<tr><td>3</td><td>85-89.99</td><td>A/B</td><td>9</td><td>55-59.99</td><td>C</td></tr>
<tr><td>4</td><td>80-84.99</td><td>B+</td><td>10</td><td>50-54.99</td><td>C-</td></tr>
<tr><td>5</td><td>75-79.99</td><td>B</td><td>11</td><td>55-34.99</td><td>D</td></tr>
<tr><td>6</td><td>70-74.99</td><td>B-</td><td>12</td><td><35</td><td>E</td></tr>
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<tr><td>Media employed</td><td>White-board, Lcd Projector, e-learning (https://daring.uin-suka.ac.id/)</td></tr>
<tr><td>Reading list</td><td>1. Telford, W., Geldart, L.P., dan Sheriff, R. E., 1976. Applied Geophysics.Cambridge Univ Press, Cambridge.
2. Griffiths, D. J., 1999. Introduction to Electrodynamics, 3rd ed., Prentice Hall</td></tr>
</table>

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1			√	√					
CO 2			√	√					
CO 3			√	√					