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Undergraduate Programme in Physics

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MODULE HANDBOOK

Module Name	Rock Physics
Module level, if applicable	Bachelor
Code, if applicable	FIS424055
Subtitle, if applicable	-
Courses, if applicable	Rock Physics
Semester(s) in which the module is taught	6th (sixth)
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	Elective course in the third year (6th 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	After completing this course, the students: CO 1. Able to explain the role of rock physics in exploration, disaster mitigation and environmental geophysics; CO 2. Able to perform rock physics modelling using rock physics software CO 3. Able to explain the working mechanism of the Digital Rock Physics in exploration problems, environmental studies, etc..
Content	a. The role of rock physics in exploration, disaster mitigation and environmental geophysics b. Rock types, and rock micro-structure c. Physical properties in rock physics such as porosity, permeability, specific surface area, density, d. Modelling rock pore microstructure using random, fractal and molecular dynamics methods, e. Elastic properties of rocks f. Resistivity and dielectric g. Homogenization and up-scaling techniques h. Digital Rock Physics

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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>
</table>
</td>
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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. Gueguen, Y., Palciauskas, 1994, Introduction to the physics of rocks, Princeton University Press.
2. Mavko, G., Mukerji, T., Dvorkin, J., 1998, The rock physics handbook: tools for seismic analysis in porous media, Cambridge University Press
3. Schoen, J., 1998, The rock physics handbook ‘physcial properties of rocks (fundamentals and principles of petrophysics), Cambridge University Press, 2nd ed
4. Bourbie, T., Coussy, O., dan Zinszner, B., 1987, Acoustic of porous media, Editions Technip</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		√	√	√					