

## Module Handbook

Module Name:	Physics of Volcanoes and Geothermal Systems
Module Level:	Bachelor
Abbreviation, if applicable:	FI2261
Sub-heading, if applicable:	
Courses included in the module, if applicable:	
Semester/term:	5/Third year
Module coordinator(s):	
Lecturer(s):	
Language:	Bahasa Indonesia
Classification within the curriculum:	<del>General Studies</del> / Major Subject / <del>Elective Studies</del>
Teaching format / class hours per week during the semester:	3 hours lectures
Workload:	3 hours lectures, 6 hours individual study and structured activities, 16 weeks per semester, and total 144 hours a semester
Credit Points:	3
Requirements:	
Learning goals/competencies:	<p>Knowledge Students understand physical concepts in geothermal system</p> <p>Skill Students able to apply physical concepts in exploration and exploitation of geothermal reservoir</p>
Content:	Introduction, geothermal energy as alternative energy, thermal structure of the earth, the lithosphere and temperature distribution, heat conduction processes in the earth, pressure thermal convection in the earth, types of geothermal systems (hot water system, system two phases: domination water and steam, hot dry rock system), geothermal exploration (geoelectric method, electromagnetic method, magnetic method, self potential method, method of gravity) geochemistry, drilling (temperature measurement, pressure measurement, measurement of flow rate), approximate geothermal energy reserves, production engineering, environmental aspects .
Study/exam achievements:	Students are considered to be competent and pass if at least get 50% of maximum mark of the exams, homework, and quiz.
Forms of Media:	Slides and LCD projectors, blackboards, lab.
Literature:	<ol style="list-style-type: none"> <li>1. Harsh, Gupta. Roy, S., Geothermal Energy, Elsevier, 2008.</li> <li>2. Grant, M.A., Donaldson, I.G., Bixley, P..F., Geothermal Reservoir Engineering.</li> <li>3. Armstead, H.C.H., Geothermal Energy, E. &amp; F.N. Spon, 1978.</li> <li>4. Ghislain de Marsily, Quantitative Hydrogeology, Academic Press, Inc., 1986</li> </ol>
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