MODULE HANDBOOK DESCRIPTION

Module designation	*Geothermal Exploration & Utilization*	
Code	*FBA0015*	
Semester(s) in which the module is taught	*7/fourth year*	
Person responsible for the module	*Dr.rer.nat Teti Zubaidah, S.T., M.T.*	
Language	*Indonesian/English*	
Relation to curriculum	*Elective for Electrical Power System major*	
Teaching methods	*lectures, small group discussion, case base method.*	
Workload (incl. contact hours, self-study hours)	Contact minutes every week, each week of the 16 weeks/semester: • Lectures (incl. on-site lectures): 2 x 50 minutes • Exercises and Assignments: 2 x 60 minutes • Self-study: 2 x 60 minutes. Total study hours = 5 hours 40 minutes/week.	
Credit points	*2 SKS (~ 3.2 ECTS)*	
Required and recommended prerequisites for joining the module	-	
Module objectives/intended learning outcomes	1. *Students are able to analyse relationship between utilization of renewable energy sources and sustainability of life quality; geothermal as a kind of renewable energy resource; and the potential of geothermal in Indonesia.*	*PLO3*
	2. *Students are able to design a proper method of geothermal exploration, especially geomagnetic data acquisition.*	*PLO4*
	3. *Students are able to design a plan of geothermal utilization for direct and indirect using.*	*PLO4, PLO8*
	4. *Students are able to assess and evaluate the risks and socio-economical aspects of geothermal business.*	*PLO8*

Content	*This course aims to introduce students to the technology of exploration, management, and utilization of geothermal energy (both direct and indirect use), as a form of renewable energy which is a natural resource and a gift upon Indonesia.* 1. *Renewable energy for nature preservation* 2. *Geothermal as renewable energy* 3. *Geothermal energy potential in Indonesia* 4. *Various methods of geothermal exploration* 5. *Geomagnetic data acquisition and processing methods for geothermal exploration* 6. *Direct use of geothermal energy* 7. *Indirect use of geothermal energy* 8. *Socio-economic aspects of geothermal energy utilization* 9. *Development of geothermal energy*
Examination forms	- *Written and oral case study* - *Midterm and final test*
Study and examination requirements	*The final grade in the module is composed of:* *a. Case assessment: 2 x 30% = 60%* *b. Midterm assessment: 20%* *c. Final assessment: 20%* *Students must have a final grade of 65% or higher to pass*
Reading list	1. *Ditjen EBTKE, 2017, Potensi Panas Bumi Indonesia Jilid 1, Kementerian Energi dan Sumber Daya Mineral, 2017.* 2. *Ditjen EBTKE, 2017, Potensi Panas Bumi Indonesia Jilid 2, Kementerian Energi dan Sumber Daya Mineral, 2017.* 3. *William E. Glasley, 2014, Geothermal Energy Renewable Energy and the Environment, 2nd Ed., CRC Press.* 4. *Tuti Ermawati & Siwage Dharmanegara, 2014, Pengembangan Industri Energi Alternatif: Studi Kasus Energi Panas Bumi Indonesia, LIPI Press.* 5. *Untung Sumotarto, 2015, Eksplorasi Panas Bumi, Ombak Yogyakarta.* 6. *Djoko Santoso, 2012, Eksplorasi Energi Geotermal, ITB Press.*