FI582 Geophysical Data Analysis

Module name:	Geophysical Data Analysis
Module level, if applicable:	Undergraduate
Code:	FI582
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	7th
Module coordinator:	Nanang Dwi Ardi
Lecturer(s):	Nanang Dwi Ardi
Language:	Bahasa Indonesia
Classification within the curriculum:	Elective course

Type of Teaching	Contact hours per week during the semester	Class Size
1. Lecture (conceptual, contextual and problem-solving approaches through expository, and discussions). 2. Structured activities (assignments based on conceptual, contextual and problem-solving approaches) 3. Self-study (reading literature)	2 hours 30 minutes	20

Workload:	Total workload is 136 hours (4.8 ECTS) per semester which consists of 150 minutes lectures (1.2 ECTS), 180 minutes structured activities (1.5 ECTS), and 180 minutes self-study per week for 14 weeks (1.5 ECTS), 150 minutes for each exam (0.2 ECTS), and 360 minutes for each exam preparation (0.4 ECTS).
Credit points:	4.8 ECTS
Pre-requisites course(s):	Geological Geophysics, Geophysical Exploration
Course Learning Outcomes (CLO):	After taking this course the students have ability to: CLO1. Explain importance data analysis in earth exploration CLO2. Explain principle geophysics statistical data CLO3. Explain principle signal and its classification CLO4. Make statistic solution in geophysics cases CLO5. Differentiate between analogue and digital signal CLO6. Explain inversion model
Content:	Introduction to Processing Software in Geophysics, Statistical geophysics data analysis, signal and its classification, Digital Signal Processing, Fourier transform in geophysics, Signal Filtering, Digital Image Processing, Sparse representation, Inversion model

			The final mark will be weight as follow:			

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Study/exam achievements:	<table><tr><th>No</th><th>CLO</th><th>Assessment Object</th><th>Assessment Techniques</th><th>Weight</th></tr><tr><td>1</td><td>CLO1-CLO6,</td><td>Subject specific competence: a. Individual assignments b. Mid Exam c. Final Exam</td><td>Written Written test Written test</td><td>30% 35% 35%</td></tr><tr><td colspan="4">Total</td><td>100%</td></tr></table>
Forms of media:	Board, LCD Projector, Laptop/Computer, stream video conference, geophysics processing software
Literature:	1. Madrinovella, I, dkk., (2020). *Metode Komputasi Geofisika Menggunakan Python*. Universitas Pertamina 2. Trauth, M.H., (2010). *MATLAB Recipes for Earth Sciences.* Springer-Verlag Berlin Heidelberg. 3. Menke, M., (2012). *Geophysical Data Analysis: Discrete Inverse Theory, Vol. 45 MATLAB Edition.* Academic Press. 4. Pine, D.J., (2019). *Introduction to Python for Science and Engineering* -CRC Press. 5. Downey, B. A., (2016). *Think DSP: Digital Signal Processing in Python*. O'Reilly Media. 6. Unpingco, J., (2014). *Python for Signal Processing Featuring IPython Notebooks*. Springer International Publishing.

PLO and CLO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO1				√								
CLO2				√								
CLO3				√								
CLO4				√								
CLO5				√								
CLO6				√								