



MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF PHYSICS

Ketintang Campus, Jalan Ketintang, C3 Building, Surabaya 60231
Website: <http://s1-fisika.fmipa.unesa.ac.id/>, email: s1-fisika@unesa.ac.id

Undergraduate Programme In Physics

Module Handbook

Module Name :	<i>Metode Inversi Data Fisika</i> Physics Data Inversion Method
Module level :	Bachelor degree/Undergraduate Programme
Course Code :	4520102135
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	6/Third Year
Module coordinator(s)	
Lecturer(s):	
Language:	<i>Bahasa Indonesia</i> (Indonesian Language)
Classification within the curriculum:	Compulsory / Elective
Teaching format/class hours per week during the semester:	2 contact hours of lectures (<i>sks</i> or credit unit*)
Workload :	a. Lecture: 1 x 50 minutes lectures, 1 x 60 minutes structured activity, 1 x 60 minutes individual activity, 14 weeks per semester, 39.67 total hours of lecture per semester ~ 1.59 ECTS b. Lab activity: 1x170 minutes lab activity, 14 weeks per semester 39.67 total hours of lab activity per semester ~ 1.59 ECTS Total of lecture and lab activity= 79.33 total hours per semester ~ 3.18 ECTS**
Credit Point:	2 sks (3.18 ECTS)
Requirements:	



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Learning goals/competencies:	1. Being able to explain theory and modeling concepts in geophysics, especially inversion modeling 2. Being able to transform linear equations into matrix form 3. Being able to apply linear and non-linear inversion methods as well as in geophysical modeling 4. Being able to analyze non-linear inversion problems with a global approach and its application in the field of geophysics										
Content	This course provides theories and concepts of geophysical modeling including forward modeling and modern inversion, as well as their application to geophysical problems. This course studies the estimation of parameter models, linear and non-linear inversion methods and their solutions, the use of a priori information, and the use of damping parameters.										
Attribute Soft skill:	Scientific report, public speaking, and team work										
Study/exam achievements:	The final grade (NA) is calculated based on the following ratio: <table border="1"> <thead> <tr> <th>Assessment Components</th><th>Percentage of contribution</th></tr> </thead> <tbody> <tr> <td>Participation</td><td>20%</td></tr> <tr> <td>Assignment</td><td>30%</td></tr> <tr> <td>Mid-semester test</td><td>20%</td></tr> <tr> <td>Final semester test</td><td>30%</td></tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
Assessment Components	Percentage of contribution										
Participation	20%										
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Final semester test	30%										
Learning Methods :	1. Student-centered approach, 2. Lecture and discussion, 3. Laboratorium activity 4. Presentations										
Form of Media:	<i>Power Point</i> slides, e-book file, and multimedia.										



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Literature references):	(primary	1. Menke, W., Geophysical Data Analysis: Discrete Inverse Theory, Academic Press, 1989. 2. Tarantola, A., Inverse Problem Theory: Methods for Data Fitting and Model Parameter Estimation, Elsevier, 1987. 3. Sen, MK, Stoffa, PL, Global Optimization Methods in Geophysical Inversion, Elsevier, 1995 4. Grandis, H., Introduction to Geophysical Inversion, HAGI, 2009.
Notes:		*1 credit unit or <i>sks</i> in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018. **1 credit unit or <i>sks</i> = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019