

Module Handbook

Undergraduate Programme in Geophysical Engineering

FACULTY OF MINING AND PETROLEUM ENGINEERING INSTITUT TEKNOLOGI BANDUNG 2022

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Module Handbook Lists

Undergraduate Program of Geophysical Engineering

No	Code	Module Name	Credit
1	MA1101	Mathematics IA	4
2	FI1101	Elementary Physics IA	4
3	KI1101	General Chemistry IA	3
4	KU1164	Introduction to Mineral & Energy Resources	2
5	KU1072	Introduction to Computation	2
6	KU1024	English	2
7	MA1201	Mathematics IIA	4
8	FI1201	Elementary Physics IIA	4
9	KI1201	General Chemistry IIA	3
10	KU1011	Scientific Writing	2
11	KU1001	Sports	2
12	KU1202	Introduction to Engineering & Design	2
13	GL2111	Physical Geology	3
14	KU2071	Pancasila and Civic Education	2
15	TG2101	Geomathematics 1	3
16	TG2102	Wave in Geophysics	3
17	TG2103	Basic Geophysics	2
18	TG2104	Geophysical Instrumentation	3
19	TG2105	Computing in Geophysics	3
20	GD2001	Introduction on Surveying	2
21	GL2141	Introduction to Mineralogy and Petrology	3
22	KU2061	Religion and Ethics (Islamic)	2
23	TG2203	Geomathematics II	3
24	TG2204	Potential Theory	2
25	TG2201	Geostatistics I	3
26	TG2231	Seismology	3
27	GL2012	Structural Geology	3
27	GL3053	Sedimentology and Stratigraphy	3
29	TG3110	Geophysical Signal Analysis	3
30	TG3102	Geostatistics II	2
31	TG3109	Seismic Refraction	3
32	TG3132	Earth Crust Mechanics	2
33	TG3201	Geophysical Thermodynamics and Fluid Dynamic	2
34	TG3261	Seismic Data Acquisition	3
35	TG3241	Geo-electromagnetism	3
36	TG3263	Gravity and Geomagnetics	3
37	TG3222	Geodynamics	2

38	TG3290	Fieldwork	3
39	TG3001	Advanced Geophysical Instrumentation	3
40	TG4001	Communication in Geophysics	2
41	TG4092	Final Project I	2
42	TG4162	Seismic Interpretation	3
43	TG4141	Geophysical Inversion	2
44	TG4029	Capita of Selecta in Geophysics	2
45	TG4047	Design in Geophysical Engineering	2
46	TG4063	Special Topic in Geophysics	2
47	TG4067	Job Training	2
48	TG4128	Geotomography	3
49	TG4142	Engineering & Environmental Geophysics	3
50	TG4166	Rock Physics	2
51	TG4092	Final Project II	3
52	TG4269	Economical Geophysics and Management	2
53	TG4243	Volcanology and Geothermal Exploration	3
54	TG4223	Numerical Simulation of The Earthquake	3
55	TG4225	Applied Seismology	2
56	TG4226	Physics of the Earth's Interior	2
57	TG4264	Earthquake and Fault Mechanism	2
58	TG4264	Seismic Inversion for Reservoir	3
59	TG4265	Seismic Attributes for Reservoir	2
60	GL4168	Introduction to Seismic Stratigraphy	2

Undergraduate Program of Geophysical Engineering

1. Mathematics IA

Module designation	Mathematics IA	
Module level	Bachelor	
Code, if applicable	MA1101	
Sub-heading, if applicable:	-	
Courses included in the	Mathematics IA	
module, if applicable:		
Semester(s) in which	First Year	
module is taught		
Module coordinator(s)	Drs. Warsoma Djohan, M.S.	
Lecturer(s)	Drs. Warsoma Djohan, M.S.	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	_
	session After presentation they make report what	
	they present before	
	Tutorial sossion	
	Lecturer rives students some problem beforehand. In	
	eless students some problem beforenand. In	
	class students explain now to solve the problem in	N
	groups. Lecturer checks now they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	
	material.	

Workload					
	Class lectures	4 hours			
	Tutorial session	4 hours			
	Supervision and consultatio	n		-	
	Practical or experimental la	boratory	v work	-	
	Individual studies			4 hours	
	Total workload per week			12 hours	;
	Presentation			-	
	Class project			-	
	Field trip			-	
	Total workload per semeste	r		192 hour	rs
Credit points	4				
Requirements prerequisites	-				
Recommended prerequisites	-				
Knowledge	Skill		Competence		٦
Inderstanding the bas	sic • Able to solve calculus		Bossess th	0	
• Onderstanding the bas	related problem crea	tivolv	 POSSESS (II readiness) 	e to learn	
	and having systemati	civery,	other cour	cos that	
formulae methods or	and having systematic	ses that			
formulae, methods, ar	id logical, and critical th	lius as the			
thinking.	Able to communicate	Able to communicate their prerequisite.			
	works and their think	ing			
	orally and in written				
	papers.				
Content	This course gives rigorous un	derstand	ling of some top	ics in calcu	lus
	as one of the fundamental courses in mathematics to prepare the				
	students in learning advanced topics. It covers functions and limit,				
	derivatives and their applications, integrations and their				
	applications, transcendental functions, and technique of				
	integrations				
Study and examination					
requirements and forms of	Midterm test		30%		
examination	Final Test		30%		
	Presentation, quizzes,		40%		
	homework	,	10/0		
	Laboratory work	-	-		
Media employed	Slides and LCD projectors, bla	ackboard	ls		
Reading list	1. Thomas, Calculus, Pe	arson Ec	lucation, 2010, 1	2th ed.	
-	2. James Stewart, Calcu	lus, Broo	oks/Cole Publishi	ing Compai	ny,
	1999, 4th ed.				
	3. Dale Varberg, Edwin Purcel and Steve Rigdon, Calculus,				
	Prentice Hall, 2007, 9	th ed.			

2. Elementary Physics IA

Module designation	Elementary Physics IA	
Module level	Bachelor	
Code, if applicable	FI1101	
Sub-heading, if applicable:	-	
Courses included in the module, if applicable:	Elementary Physics IA	
Semester(s) in which module is taught	First Year	
Module coordinator(s)	Dr. Enjang J. Mustopha	
Lecturer(s)	Dr. Enjang J. Mustopha	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be	
	pop guizzes, task, or homework in some classes.	\checkmark
	Lecturer presents course material using media	
	such as slide in LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand.	
	In class students explain how to solve the problem	\checkmark
	in groups. Lecturer checks how they solve the	
	problem in turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project.	
	Students consults problem which they face and	-
	discuss together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to	-
	course material.	

Workload							
Workload	Class lectures		4 hours				
	Tutorial session		3 hours				
	Supervision and consul	Supervision and consultation					
	Practical or experiment	tal laboratory work	2 hours				
	Individual studies	Individual studies					
	Total workload per we	ek	12 hours				
	Presentation		-				
	Class project		-				
	Field trip		-				
	Total workload per sen	nester	192 hours				
Credit points	4						
Requirements prerequisites	-						
Recommended prerequisites	-						
Learning Goals							
Knowledge	Skill	Competence					
Understanding the	• Able to plan and	• Possess the ability to ap	ply the				
concept of vectors	prepare practical	concept of vectors and	Newton's				
and basic concepts	laboratory	laws for a single particle	e and for a				
and principles in	investigations on	system of particles in 1,	, 2, and 3				
mechanics, fluid,	Newton	dimensions.					
elasticity and	mechanics.	• Possess the ability to ap	oply the				
oscillation, and	• Able to conduct	concept of work-energy	/ for				
thermodynamics.	experiments and	solving simple problem	s in				
,	record data using	mechanics.	-				
	a variety of	 Possess the ability to for 	rmulate				
	suitable	solve and analyze probl	ems of				
	instruments for	statics and dynamics of	rigid				
	Newton	body systems	1.B.G				
	mechanics	 Possess the ability to so 					
	experiments	 roblems in statics and 	dynamics				
	 Able to conduct 	of fluids	uynannes				
	evneriment in a	Deccess the ability to ce	luo and				
	responsible and	Possess the ability to so analyze problems in	ive and				
	compliance way	thermodynamics					
	to the relevant	nernouynamics.					
	to the relevant	Possess the ability to an	halyze and				
	regulations	Interpret experimental	data on				
	regulations.	Newtonian mechanical					
		experiments using know	vieage of				
		mathematics and physic	CS.				
		Possess the ability to de	esign a				
		simple device that uses	the				
		concepts of Elementary	Physics				
		IA (RBL).					

Content	Kinematics of Point Objects, Relative Motion, Dynamics of Point						
	object (Newton's laws of the force concept, work and energy,						
	impulse and momentum. co	nservation laws	s). Dynamics System	of			
	point Objects (center of mas	s). Rotational r	notion (angular				
	momentum rigid body rotat	ion with a five	d avis) Flasticity and				
	Oscillations, Wayo Mochanic	c Statics and E	Luid Dynamics				
	The sum and survey (like stice the survey)		nuiu Dynamics,				
	Inermophysics (kinetic theol	ry of gases, He	at and work, The firs	st			
	law of thermodynamics , effi	ciency, Carnot	cycle)				
Study and examination							
requirements and forms of	Midterm test	\checkmark	30%				
examination	Final Test	\checkmark	30%				
	Presentation, quizzes,	.	100/				
	homework	N	10%				
	Laboratory work	-	20%				
Media employed	Slides and LCD projectors, bl	ackboards, lab					
Reading list	1. Halliday, D., Resnick,	R., and Walke	r, J., Principle of				
_	Physics, 9 th ed. Exter	ded, John Wile	ey & Sons, 2011.				
	2. Serway, R.A., Physic	s for Scientists	s and Engineers. San	der			
	College, 1996						
	3. Alonso, M. & Finn, F	J. Physics, Ad	dison Wesley, 1992				

3. General Chemistry IA

Module designation	General Chemistry IA	
Module level	Bachelor	
Code, if applicable	KI1101	
Sub-heading, if applicable:	-	
Courses included in the module, if applicable:	General Chemistry IA	
Semester(s) in which	First year	
module is taught		
Module coordinator(s)	Dr. Bambang Prijamboedi	
Lecturer(s)	Dr. Bambang Prijamboedi	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	\checkmark
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	
		I]

Workload						
	Class	lectu	ires			3 hours
	Tutor	ial se	ession			1 hours
	Super	visio	on and consultation			-
	Practi	cal c	or experimental laboratory	/ wo	rk	3 hours
	Indivi	dual	studies			3 hours
	Total	worl	kload per week			10 hours
	Prese	ntati	on			-
	Class	proje	ect			-
	Field	trip				-
	Total	worl	kload per semester			160 hours
Credit points	3					
Requirements prerequisites	-					
Recommended prerequisites	-					
Learning Goals						
- Kaawladaa			CF:II		Compate	200
Knowleage			SKIII Able to determine the			ence
Understand atoms,	unde	•	Able to determine the	•	Possess the	e ability of
elements, ionic compo	unus,		chamical reactions in		the relation	
identification			chemical reactions in		the relation	n between
Identification.			molecular scale and		microscopi	
Understand the conce	pt of		macroscopic scale		molecular	level and
mole, limiting reaction	s and		such as mass,		macroscop	lic level
reaction yields.			empirical and		through th	e mole
Understand electrolytes,			molecular formula.		and stoich	iometry
acids and bases		•	Able to use titration		concepts, t	theory and
identification, and			methods and several		descriptior	n of atoms
understand the acid-ba	ase		chemical analyses to		and molec	ules and
nomenclature, molarit	ies		solve some problems		its relation	with the
and reactions in solution	on.		related to the solution		properties	of
Understand the oxidat	ion		properties.		materials.	
and reduction reactior	ıs.	•	Able to balance the	•	Possess the	e ability to
Understand the conce	pt of		oxidation-reduction		use some b	basic
energy and its relation	with		reactions and		chemical a	nalytical
the chemical change, v	vorks,		calculate the mass		method to	
internal energy. first la	w of		involved in the		understand	d and
thermodynamics. Hese	s's law.		oxidation-reduction		explain sor	me
Understand the concer	nt of		reaction.		chemical	
entropy second and the	hird	•	Able to determine the		phenomen	a and also
law of thermodynamic			amount of heat that		to identifv	the
Gibbs free energy bor	d.		related to a chemical		chemical n	roperties
energy, DOI	iu ii		reaction		of commo	n chemical
energy.	_	•	Able to determine the		substances	
Understand the atomic		•	molocular structure		Jubblunces	
spectra, the Bohr Theo	οrγ,		and its goometry for a			
			and its geometry for a			
			cnemical compound.			

•	wave model of atom, s atomic orbital. Understand ionic bonc covalent bonding and understand the concep polar molecule, Lewis structure identification Understand geometry molecular structure, be types in molecules and matters identification. Understand the ideal a real gas law, Dalton's g law. Understand the intermolecular forces i materials, Le chatelier principle. Understand structure o crystalline solids, cryst types identification an physical properties.	pin, ling, ot of n. of onding I und gas n of al d its					
Content A st re o N		Atoms, stoichio reactio of atom Molecu proper	elements and compo ometry; Reaction in aq ns; Energy and chemic ns based on quantum Ilar structure; Propert ties of liquids and solid	unds; Con queous soli cal reaction mechanics ies of gase ds.	cepts of mo ution; Oxid n; Thermoo s; Chemical es; Intermol	ole and ation-reductio lynamics; The bonding; ecular force a	on ory ind
Study	and examination	1 - 1					
requ	rements and forms of	Midte	erm test	\checkmark		40%	
exam	ination	Final	Test			40%	
		Prese home	ntation, quizzes, work			10%	
		Labor	boratory work			10%	
Media employed Sli		Slides.	Beamer, boards. inter	net, exerci	ises, labora	torv	
Read	ing list	1.	James E. Brady, Neil D	. Jesperse	n and Aliso	, n Hyslop,	
	-	2.	Chemistry 6 th Edition, Raymond Chang, Cher	John Wile mistry 10 th	y and Sons, Edition, M	2012. cGraw-Hill, 20)10.

Module designation	Introduction to Mineral and Energy Resources	
Module level	Bachelor	
Code, if applicable	KU1164	
Sub-heading, if applicable:	-	
Courses included in the module, if applicable:	Introduction on Mineral and Energy Resources	
Semester(s) in which	First Year	
module is taught		
Module coordinator(s)	Prof. Ridho Kresna Wattimena	
Lecturer(s)	Prof. Sri Widiyantoro, Prof. Djoko Santoso, Dr. Darharta Dahri Afnimar, Dr. Budi Sulistyo, Prof. Syoni Soepriyanto, Dr. Sutopo Prof. Awali Priyono, Dr. Fatkhan, Dr. Muhamad Nur Heriawan Aryo Prawoto Wibowo, Prof. Doddy Abdassah, Prof. Tutuka A	n, Dr. o, , Dr. riaji
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures Lecturer teaches students in class. There will be pop quizzes, task, or homework in some classes. Lecturer presents course material using media such as slide in LCD projector and whiteboard.	\checkmark
	Presentation Students present course materials in front of class using slide in LCD projector, followed by discussion session. After presentation, they make report what they present before.	-
	Tutorial session Lecturer gives students some problem beforehand. In class students explain how to solve the problem in groups. Lecturer checks how they solve the problem in turns.	-
	Class project and discussion Lecturer gives students a project which related to current issues and course material.	-
	Supervision and consultation This activity is continuation of class project. Students consults problem which they face and discuss together how to solve the problem.	-
	Practical or experimental laboratory work Students do practical or experimental in the laboratory according to practical module. Firstly, laboratory assistant tell main idea of practical or experimental. They do the practical afterwards.	-
	Visit field area or company which is related to course material.	-

4. Introduction to Mineral & Energy Resources

Workload			
	Class lectures	2 hours	
	Tutorial session	-	
	Supervision and consultation	-	
	Practical or experimental laboratory work	-	
	Individual studies	4 hours	
	Total workload per week	6 hours	
	Presentation	-	
	Class project	-	
	Field trip	-	
	Total workload per semester	96 hours	
Credit points	2		
Requirements prerequisites	-		
Learning Goals			
Knowledge	Skill Competence		
Understanding the history	ry, Able to map the mining Possess an	extensive	
development and scope	of resources using geoscience knowledge to	describe the	
geosciences.	techniques and methods inner structure	of the earth	
Understanding the init	ner explained in the class. and its minin	g resources	
structure of the earth a	nd potential.		
its physical properties.	S.		
Understanding	:he		
potential of the min	ing		
resources in Indones	sia,		
from exploration	to		
exploitation.			
Content	Class orientation and team preparation student to	am activities:	
content	problem definition and formulation, propose altern	ative solution	
	and concentual design	ative solution	
Study and examination	Students are considered to be competent and pa	if_ctudoptc	
study and examination	someleted the task under designated criteria. Final c	ss II students	
requirements and forms of	to the degree of eccentric resignated criteria. Final g	fade is scaled	
examination	to the degree of accomplishments to design criteria		
Media employed	Slides, Beamer, boards		
Reading list	1. <i>Howe</i> , Charles W., Natural Resource Economi	cs. John Wiley	
	& Sons, N.Y. 1979		
	2. Gocht, W.R., H. Zantop, R.G. Eggert., International Mineral		
	Economics. Springer- Verlag, Germany, 1988		
	3. Sharma, P. V., 1997, Environmental and Engineering		
Geophysics: Cambridge University Press.			

5. Introduction to Computation

Module designation	English			
Module level	Bachelor			
Code, if applicable	KU1024			
Sub-heading, if applicable:	-			
Courses included in the module, if applicable:	English			
Semester(s) in which	First Year	First Year		
module is taught				
Module coordinator(s)	Dr. Bambang Supriyanto, M.Ed.			
Lecturer(s)	Dr. Bambang Supriyanto, M.Ed.			
Language	Bahasa Indonesia			
Relation to curriculum	Major Subject / Compulsory Course			
Type of teaching, contact				
hours	Class lectures			
	Lecturer teaches students in class. There will be pop			
	quizzes, task, or homework in some classes. Lecturer	\checkmark		
	presents course material using media such as slide in			
	LCD projector and whiteboard.			
	Presentation			
	Students present course materials in front of class			
	using slide in LCD projector, followed by discussion	-		
	session. After presentation, they make report what			
	they present before.			
	Tutorial session			
	Lecturer gives students some problem beforehand. In			
	class students explain how to solve the problem in	-		
	groups. Lecturer checks how they solve the problem in			
	turns.			
	Class project and discussion			
	Lecturer gives students a project which related to	-		
	current issues and course material.			
	Supervision and consultation			
	This activity is continuation of class project. Students			
	consults problem which they face and discuss together	-		
	how to solve the problem.			
	Practical or experimental laboratory work			
	Students do practical or experimental in the laboratory			
	according to practical module. Firstly, laboratory	-		
	assistant tell main idea of practical or experimental.			
	They do the practical afterwards.			
	Field trip			
	Visit field area or company which is related to course	_		
	material.			
	material.			

Workload					
	Class lectures		2 hours		
	Tutorial session		-		
	Supervision and consultation			-	
	Practical or experimental la	aboratory work		-	
	Individual studies			4 hours	
	Total workload per week			6 hours	
	Presentation -				
	Class project -				
	Field trip -				
	Total workload per semest	er		96 hours	5
Credit points	2				
Requirements prerequisites	-				
Learning Goals			[-
Knowledge	Skill		Comp	petence	_
Understand to	 Able to develop a paragra 	aph in various	 Poss 	ess an	
identify parts of a	methods.	ive and	exte	nsive	
paragraph.	Able to compose a cones cohoront paragraphs	ive and	KNO\	wiedge to	
• Oliderstand to	Able to link ideas betwee	n contoncos	scior	e d atific	
naragranhs	 Able to link ideas between and paragraphs 	in sentences		v	
 Understand to 	 Able to organize a cobesi 	ve and	C350	y.	
identify the parts of	coherent essay.	ve and			
an essay.	concrete clouy.				
, , ,					
Content	Train the students' critical thinking skills in reading activities that				
	include (a) before the reading is done, (b) at the time of reading is in				
	progress, and (c) after the re	eading is over.	Students v	will also lea	arn
	materials on academic writi	ng that compri	ise senten	ce structu	res
	and types of sentences; par	ts and kinds of	ⁱ paragrap	hs; parts a	and
	kinds of essay; vocabulary; sp	pelling; citation	and refere	ences	
Study and examination					
requirements and forms of	Midterm test		309	%	
examination	Final Test		409	%	
	Attendance, quizzes,	7	304	26	
	homework	v	50.	/0	
	Laboratory work	-	-		
Media employed	Whiteboard, computer, slides, beamer, boards, etc.				
Reading list	1. Bander, R., From Sentence to Paragraph. Canada: CBS College				
	Publishing 1981.				
	2. English, K.A., Northstar: Reading and Writing. New York:				
	Longman. 2004.				
	3. Frank, M., Sentences and Complex Sentences. New Jersey:				
	Prentice Hall. 1972.				
	4. Oshima, A. and Ann Hague. Writing Academic English. New				
	York: Longman. 1999.				

5.	KK Ilmu Kemanusiaan, FSRD-ITB. Academic Writing. Bandung:
	Penerbit ITB. 2013.(Main Reference)
6.	Strauch, O.A. Writers at Work: The Short Composition.
	Cambridge: Cambridge University Press. 2005.
7.	Williams, A. Writing for IELTS. London: Harper Collins. 2011.
8.	Wingersky, J. Et al. Writing Paragraphs and Essays. California:
	Wardsworth Publishing Company. 1995.
9.	Zemach, E.D. Writers at Work: The Essay. Cambridge:
	Cambridge University Press. 2008.

6. English

Module designation	English		
Module level	Bachelor		
Code, if applicable	KU1024		
Sub-heading, if applicable:	-		
Courses included in the	English		
module, if applicable:			
Semester(s) in which	First Year		
module is taught			
Module coordinator(s)	Dr. Bambang Supriyanto, M.Ed.		
Lecturer(s)	Dr. Bambang Supriyanto, M.Ed.		
Language	Bahasa Indonesia		
Relation to curriculum	Major Subject / Compulsory Course		
Type of teaching, contact			
hours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer		
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class using		
	students present course matchas in none of class using		
	After procentation, they make report what they procent	-	
	After presentation, they make report what they present		
	before.		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in	-	
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project and discussion		
	Lecturer gives students a project which related to	-	
	current issues and course material.		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	consults problem which they face and discuss together	-	
	how to solve the problem		
	Practical or experimental laboratory work		
	Students de prestieel er experimental in the laboratory		
	Students do practical or experimental in the laboratory		
	according to practical module. Firstly, laboratory	-	
	assistant tell main idea of practical or experimental.		
	I hey do the practical afterwards.		
	Field trip		
	Visit field area or company which is related to course	-	
	material.		

Workload			
	Class lectures		2 hours
	Tutorial session		-
	Supervision and consultation		-
	Practical or experimental labora	tory work	-
	Individual studies		4 hours
	Total workload per week		6 hours
	Presentation		-
	Class project		-
	Field trip		-
	Total workload per semester		96 hours
Credit points	2		
Requirements prerequisites	-		
Learning Goals			
Knowledge	Skill	Competer	nce
Understand to identify	Able to develop a	Possess an ex	tensive
parts of a paragraph.	paragraph in various	knowledge to	write a
Understand to assess	methods.	scientific essa	ıy.
the quality of	Able to compose a		
paragraphs.	cohesive and coherent		
Understand to identify	ntify paragraphs.		
the parts of an essay.	• Able to link ideas		
	between sentences and		
	paragraphs.		
	Able to organize a		
	cohesive and coherent		
	essay.		
Content	Train the students' critical thinking skills in reading activities that include (a) before the reading is done, (b) at the time of reading is in progress, and (c) after the reading is over. Students will also learn materials on academic writing that comprise sentence structures and types of sentences; parts and kinds of paragraphs; parts and kinds of essay; vocabulary; spelling; citation and references		
Study and examination		1	
requirements and forms of	Midterm test	√ 30)%
examination	Final Test	√ 40)%
	Attendance, quizzes,	√ 30)%
	nomework		
	Laboratory work	-	-
Media employed	Whiteboard, computer, slides, beamer, boards, etc.		

Reading list	1. Bander, R., From Sentence to Paragraph. Canada: CBS
	College Publishing 1981.
	2. English, K.A., Northstar: Reading and Writing. New York:
	Longman. 2004.
	3. Frank, M., Sentences and Complex Sentences. New Jersey:
	Prentice Hall. 1972.
	4. Oshima, A. and Ann Hague. Writing Academic English. New
	York: Longman. 1999.
	5. KK Ilmu Kemanusiaan, FSRD-ITB. Academic Writing.
	Bandung: Penerbit ITB. 2013.(Main Reference)
	6. Strauch, O.A. Writers at Work: The Short Composition.
	Cambridge: Cambridge University Press. 2005.
	7. Williams, A. Writing for IELTS. London: Harper Collins. 2011.
	8. Wingersky, J. Et al. Writing Paragraphs and Essays.
	California: Wardsworth Publishing Company. 1995.
	9. Zemach, E.D. Writers at Work: The Essay. Cambridge:
	Cambridge University Press. 2008.

7. Mathematics IIA

Module designation	Mathematics IIA		
Module level	Bachelor		
Code, if applicable	MA1201		
Sub-heading, if applicable:	-		
Courses included in the	Mathematics IIA		
module, if applicable:			
Semester(s) in which	First Year		
module is taught			
Module coordinator(s)	Drs. Warsoma Djohan, M.S.		
Lecturer(s)	Drs. Warsoma Djohan, M.S.		
Language	Bahasa Indonesia		
Relation to curriculum	General Course / Compulsory Course		
Type of teaching, contact			
hours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer	\checkmark	
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector, followed by discussion	-	
	session. After presentation, they make report what		
	they present before.		
	Tutorial session		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in		
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project and discussion		
	Lecturer gives students a project which related to	_	
	current issues and course material		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	consults problem which they face and discuss together	-	
	how to solve the problem		
	Practical or experimental laboratory work		
	Students do practical or experimental in the		
	laboratory according to practical module. Firstly	_	
	laboratory assistant tell main idea of practical or		
	experimental They do the practical afterwards		
	Field trin		
	Visit field area or company which is related to course	_	
	material	-	

Workload			
	Class lectures		4 hours
	Tutorial session		4 hours
	Supervision and consultation		-
	Practical or experimental labo	oratory work	-
	Individual studies		4 hours
	Total workload per week		12 hours
	Presentation		-
	Class project		-
	Field trip		-
	Total workload per semester		192 hours
Credit points	4		
Requirements prerequisites	-		
Recommended prerequisites	-		
Learning Goals	<u> </u>		
Knowledge	Skill	Competen	ce
Understanding the basic	Able to solve calculus	Possess the read	liness to
technical ability on the	related problem	learn other cour	ses that
appropriate concepts,	creatively, and having	need calculus as	the
formulae, methods, and	systematic, logical, and	prerequisite.	
thinking.	critical thinking.		
	Able to communicate their		
	works and their thinking		
	orally and in written		
	papers.		
Content	This course gives rigorous under	rstanding of some top	ics in calculus
	as one of the fundamental cours	ses in mathematics to	prepare the
	students in learning advanced to	opics. It covers technic	ques of
	integration, infinite series, para	metric equations, vect	ors and
	geometry in space, derivatives i	n Rn, multiple integra	s, first and
	second order differential equati	ons.	
Study and examination			
requirements and forms of	Midterm test	\checkmark	45%
examination	Final Test		35%
	Attendance, quizzes,	2	20%
	homework	N	2078
	Laboratory Work	-	-
Media employed	Slides and LCD projectors, blackboards		
Reading list	1. Thomas, Calculus, Pearson Education, 2010, 12th Fd		
-	2. James Stewart, Calculus, Brooks/Cole Publishing Company.		
	1999, 4th Ed.		
	3. Dale Varberg, Edwin Purcel and Steve Rigdon, Calculus,		
	Prentice Hall, 2007, 9th Ed.		

8. Elementary Physics IIA

Module designation	Elementary Physics IIA		
Module level	Bachelor		
Code, if applicable	FI1201		
Sub-heading, if applicable:	-		
Courses included in the	First Voar		
module, if applicable:	First Year		
Semester(s) in which	Eight Semester / Fourth Year		
module is taught			
Module coordinator(s)	Dr. Enjang J. Mustopha		
Lecturer(s)	Dr. Enjang J. Mustopha		
Language	Bahasa Indonesia		
Relation to curriculum	General Course / Compulsory Course		
Type of teaching, contact			
hours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer	\checkmark	
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector, followed by discussion	-	
	session. After presentation, they make report what		
	they present before.		
	Tutorial session		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in		
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project and discussion		
	Lecturer gives students a project which related to	-	
	current issues and course material.		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	consults problem which they face and discuss together	-	
	how to solve the problem.		
	Practical or experimental laboratory work		
	Students do practical or experimental in the laboratory		
	according to practical module. Firstly, laboratory	-	
	assistant tell main idea of practical or experimental.		
	They do the practical afterwards.		
	Field trip		
	Visit field area or company which is related to course	_	
	material.		

Workload			
	Class lectures		4 hours
	Tutorial session	3 hours	
	Supervision and consult	-	
	Practical or experimenta	al laboratory work	2 hours
	Individual studies	,	3 hours
	Total workload per weel	k	12 hours
	Presentation		_
	Class project		_
	Field trip		_
	Total workload per seme	ester	192 hours
Credit points	4		
Requirements prerequisites	-		
Recommended	-		
prerequisites			
Learning Goals			
C			
Knowledge	Skill	Competence	
Understanding the	Able to demonstrate	 Possess the ability to contract the second se	ompute
basic concepts and	an ability to conduct	the Coulomb force and	electric
principles in	experiments in	field generated by disc	rete and
electromagnetism and	measuring the	continuous charges, ind	cluding the
modern physics.	magnitude of	application of Gauss's I	aw.
	magnetic fields	• Possess the ability to co	ompute
	inside a solenoid.	potential energy and el	ectric
	• Able to demonstrate	potential due to discret	te and
	an ability to conduct	continuous charges and	d apply it
	experiments in	on capacitors.	
	measuring effective	• Possess the ability to co	ompute
	current and potential	the magnetic field gene	erated by a
	of an alternating	current-carrying wire (I	Biot-Savart
	current (AC).	law and Ampere law).	
	Able to use ampere	 Possess the ability to a 	oply the
	meter and voltmeter	Faraday and Lenz's law	of
	on a direct current	magnetic induction to §	generate
	(DC) source and able	electromotive Force (E	MF).
	to analyze the	 Possess the ability to so 	olve direct
	Wheatstone bridge.	current (DC) and altern	ating
	Able to demonstrate	current (AC) problems.	
	an ability to conduct	 Possess the ability to example. 	xplain the
	experiments in an	quantities of electroma	ignetic
	interference and	waves, wave energy, w	ave power
	diffractions.	and wave intensity.	.
		 Possess the ability to so 	olve
		problems on interferen	ce pattern
		of N-slit and the diffrac	tion
		pattern for width-slit a	nd N-slit
		(interferential-diffraction	on).

		 Possess the a problems on I relativity and dualism. Possess the a experiment o (photoelectric) Possess the a simple device concepts of E IIA (RBL). 	bility to solve Einstein's special wave- particle bility to analyze an f modern Physics c effect). bility to design a that uses the lementary Physics
Content	Electrostatic (electric field, Coulomb Law), Electric Potential Energy, Electrical Potential, Capacitor. Magnetism, Electromotive force, Alternating Current, Electromagnetic Wave, Modern Physics, Atomic Physics		
Study and examination			
requirements and forms of	Midterm test	\checkmark	30%
examination	Final Test	\checkmark	30%
	Presentation, quizzes, homework	\checkmark	10%
	Laboratory work	-	20%
Media employed	Slides and LCD projectors	blackboards, lab	
Reading list	1. Halliday. D., Resnic	k. R., and Walker	. J., Principle of Physics.
	9th ed. Extended. John Wiley & Sons. 2011.		
	 Serway, R.A., Physics for Scientists and Engineers. Sander College 1996 		
	3. Alonso, M. & Finn, E.J. Physics. Addison Wesley, 1992.		

9. General Chemistry IIA

Module designation	General Chemistry IIA	
Module level	Bachelor	
Code, if applicable	KI1201	
Sub-heading, if applicable:	-	
Courses included in the	Conoral Chamistry IIA	
module, if applicable:		
Semester(s) in which	First Year	
module is taught		
Module coordinator(s)	Dr. Bambang Prijamboedi	
Lecturer(s)	Dr. Bambang Prijamboedi	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	\checkmark
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	_
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload				
	Class	lectures		3 hours
	Tutor	ial session		4 hours
	Supervision and consultation -		-	
	Practi	cal or experimental labora	tory work	-
	Indivi	dual studies		3 hours
	Total	workload per week		10 hours
	Prese	ntation		-
	Class	project		-
	Field	trip		-
	Total	workload per semester		160 hours
		•		
Credit points	3			
Requirements prerequisites	-			
Learning Goals				
Knowledge		Skill	Competen	ice
Understanding t	he •	Able to use and converse	 Possess an 	extensive
formation of solution	on	various concentration	knowledge to	o describe
and heat of solution	n,	units.	the interaction	on among
solubility, Henry's la	w, 🖕	Able to determine the	the molecules	that form
concentration uni	ts,	reaction mechanism.	solution and	use it to
colligative properties.		Able to determine	predict the pr	operties of
Understanding the second	ne •	Able to determine	solution.	
factors that affe	ct	equilibrium constant and	 Possess an 	extensive
reaction rates, rate law	NS	concentration at	knowledge to	o describe
and integrated law	is,	equilibria.	the rate i	aws and
Inderstanding the law	•	Able to determine the	mechanism of	reactions
of equilibrium and		strength of acid and base	 Possess an 	extensive
Chatelier principles		compounds,	knowledge to	describe
Understanding the aci	d-	concentration at	the nature of	acid-base
base properties of	a	equilibria state and using	properties	and
molecule.		acid-base titration	determine the	e acidity or
 Understanding the provident of the provident	рΗ	methods	basicity of a co	ompound.
concept, equilibriu	m	Able to determine the	• Possess an	extensive
properties of acid-ba	se	Able to determine the	knowledge to	o describe
in solution and principl	es	solubility of various	the use of oxi	dation and
of acid-base titration.		compound and use	reduction pro	operties of
Identify the solubility	of	selective precipitation	atoms and c	compounds
various compound a	nd	principle to separate	explain the	change of
understand the selection	ve	various ions and	compound	connected
precipitation.		compounds.	with the	electron
Understanding t	he 🖕	Able to use	movements.	
galvanic cell, electroly	sis	electrochemical	Possess an	extensive
cell, concept	ot	nronerties of	knowledge to	o describe
reduction potential a	nd	compounds to obtain	the reason of t	the nuclear
practical application	στ	compounds to obtain	instability and	activities.
electrochemistry.		electrical energy and to		

 Understanding t concept of nucle binding energy, nucle instability and radiatio Identify the organic a biochemistry compounds, polyme nucleic acid. 	 he modify some mater properties. Able to determine unstable nuclei and radiation types to were emitted from unstable nuclear. Able to identify variorganic and biochem compound. 	rials • Pos kno the pro that con rom stru ious hical	sess an extensive weldge to describe reason of the perties of organic biochemical npounds from its actural properties	
Content	Physical properties of solution	ion, Chemical	equilibrium, Molecul	ar
	concept of acid and base,	Acid-base e	quilibria, Solubility ar	۱d
	simultaneous equilibria, El	lectrochemistr	y, Nuclear chemistr	y,
	Organic and biochemical cher	mistry		
Study and examination				
requirements and forms of	Midterm test	?	40%	
examination	Final Test	?	40%	
	Attendance, quizzes,	?	10%	
	homework			
	Laboratory work	?	10%	
Media employed	Slides Beamer boards interr	nat avarcisas	laboratory	
Roading list				
	1. James E. Brady, Neil D. Jespersen and Alison Hyslop,			
	2 Deciminary of Edition, John Wiley and Sons, 2012.			
	Z. Raymond Chang, Che	mistry 10''' Edi	tion, McGraw-Hill, 201	Ο.

10. Scientific Writing

Module designation	Scientific Writing	
Module level	Bachelor	
Code, if applicable	KU1011	
Sub-heading, if applicable:	-	
Courses included in the	Colontific Whiting	
module, if applicable:	Scientific writing	
Semester(s) in which	First Year	
module is taught		
Module coordinator(s)	Dr. Asep Wawan Jatmika	
Lecturer(s)	Dr. Asep Wawan Jatmika	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Class lectures 2 hours Tutorial session 2 hours Supervision and consultation - Practical or experimental laboratory work - Individual studies 2 hours Total workload per week 6 hours Presentation - Iclass project - Field trip - Total workload per semester 96 hours Credit points 2 Recommended - prerequisites - Learning Goals • Voorestanding the grammar and appropriate punctuations identification. • Vunderstanding paper identification. • Vunderstanding paper identification. • Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; absis sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogism; conditions, sind, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination Midterm test √ 40% Fina	Workload			
Tutorial session 2 hours Supervision and consultation - Practicial or experimental laboratory work - Individual studies 2 hours Total workload per week 6 hours Presentation - Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals • Knowledge Skill Competence • Understanding on how to make cohesive and coherent paragraphs. • • Understanding the grammar and appropriate junctuations identification. • Able to use appropriate word choice. • • Able to compose an academic article. • Possess the ability to write a scientific paper in bahasa Indonesia. Content Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentence variation; terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination Midterm test v 40% Final Test v 40% Hinder moleyed Sildes boards onlin		Class lectures		2 hours
Supervision and consultation - Practical or experimental laboratory work - Individual studies 2 hours Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites - Learning Goals - Vertexport - Nowledge Skill Competence • Able to use appropriate • • Able to arrange word choice. • Able to arrange in bahasa Indonesia. • Able to compose an academic article. • • Understanding parts of essay and paper identification. • • Understanding parts of essay and paper identification. • • Spelling, capitalization, Ioan translation, and use of punctuation; word formation in sentences; baic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and selectory chapter, issues, analysis, and conclusion; terminologies, definitions, and sentences; bais, and conclusion; initial complementation and final complementation; typing, citations, and		Tutorial session		2 hours
Practical or experimental laboratory work - Individual studies 2 hours Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals - Moderstanding on how to make cohesive and coherent paragraphs. • Able to use appropriate word choice. • Possess the ability to write a scientific paper in bahasa Indonesia. • Understanding the grammar and appropriate punctuations identification. • Able to develop ideas in various ways. • Able to develop ideas in various ways. • Understanding parts of essay and paper identification. • Able to develop ideas in various ways. • Able to develop ideas in various ways. • Understanding parts of essay and paper identification. • Able to develop ideas in various ways. • Able to develop ideas in various ways. • Understanding parts of essay and paper identification. • Able to compose an academic article. • Able to compose an academic article. Content Spelling, capitalization, Ioan translation, and use of punctuation;		Supervision and consultation -		-
Individual studies 2 hours Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals • Winderstanding on how to make cohesive and coherent paragraphs. • • Understanding the grammar and appropriate punctuations identification. • • Able to arrange sentences correctly. • • Able to develop ideas in various ways. • • Able to develop ideas in various mays. • • Able to develop ideas in various mays. • • Able to compose an academic article. • Content Spelling, capitalization, Ioan translation, and use of punctuation; word formation and use of word formation in sen		Practical or experimental laboratory work -		-
Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Requirements prerequisites - Recommended - prerequisites - Learning Goals • Vinderstanding on how to make cohesive and coherent paragraphs. • • Understanding the grammar and appropriate punctuations identification. • • Able to arrange sentences correctly. • • Able to compose an academic article. in bahasa indonesia. Content Spelling, capitalization, Iban translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination Requirements and forms of examination Midterm test 40% Final Test 40% Able borards online communication internet everyises		Individual studies 2 hours		2 hours
Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals - Moderstanding on how to make cohesive and coherent paragraphs. - Understanding the grammar and appropriate punctuations identification. - Widerstanding parts of essay and paper identification. - Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination requirements and forms of examination Midterm test 40% 40% Final Test Midterm test v 40% 40% Final Test v 40% 40%		Total workload per week		6 hours
Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals • Mowledge Skill Competence • Outderstanding on how to make cohesive and coherent paragraphs. • • Understanding the grammar and appropriate punctuations identification. • Able to arrange sentences correctly. • • Able to develop ideas in various ways. • Able to compose an academic article. • Content Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogism; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination Midterm test √ 40% Attendance, quizzes, homework Laboratory Work - -		Presentation -		
Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals - Vinderstanding on how to make cohesive and coherent paragraphs. • Able to use appropriate word choice. • Possess the ability to write a scientific paper in bahasa Indonesia. • Understanding the grammar and appropriate punctuations identification. • Able to develop ideas in various ways. • Able to compose an academic article. • Understanding parts of essay and paper identification. • Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentences; basic sentence patterns, effective sentences, and sentences; basic sentence patterns, effective sentences, and sentences; basic word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentences; basic sentence, patterns, effective sentences, and sentences; basic sentence, quizzes, ind and final complementation; typing, citations, and refer		Class project -		
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Credit points 2 Requirements prerequisites - Recommended - prerequisites - Learning Goals Modestanding on how to make cohesive and coherent paragraphs. Understanding the grammar and appropriate punctuations identification. Understanding pars of essay and paper identification. Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination requirements and forms of examination Midterm test 40% Attendance, quizzes, homework 20% Attendance, quizzes, homework 20% 				
Sector Skill Competence Requirements prerequisites - Recommended - prerequisites - Learning Goals - Image: Competence - • Understanding on how to make cohesive and coherent paragraphs. • Able to use appropriate word choice. • Possess the ability to write a scientific paper in bahasa Indonesia. • Understanding the grammar and appropriate punctuations identification. • Able to develop ideas in various ways. • Able to compose an academic article. • Understanding parts of essay and paper identification. • Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences; basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination requirements and forms of examination Midterm test v/ 40% Final Test v/ 40% Attendance, quizzes, v/ 20% Laboratory Work Media employed Slides baards online communication internet evercies	Credit points	2		
Recommended - prerequisites - Learning Goals - Understanding on how Able to use appropriate word choice. Able to arrange sentences correctly. Able to develop ideas in various ways. Able to compose an academic article. Able to compose an academic article. Content Spelling, capitalization, loan translation, and use of punctuation; word formation and use of word formation in sentences, basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination requirements and forms of examination Midterm test V A0% Attendance, quizzes, N Z0% Laboratory Work - 	Requirements prerequisites	-		
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Knowledge Skill Competence • Understanding on how to make cohesive and coherent paragraphs. • Able to use appropriate word choice. • Possess the ability to write a scientific paper in bahasa Indonesia. • Understanding the grammar and appropriate punctuations identification. • Able to develop ideas in various ways. • Able to compose an academic article. • Inbahasa Indonesia. • Understanding parts of essay and paper identification. • Able to compose an academic article. • Word formation in sentences; basic sentence patterns, effective sentences, and sentence variation; terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and references Study and examination requirements and forms of examination Midterm test $$ 40% Final Test Midterm test $$ 20% Laboratory Work -	prerequisites			
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terminologies, definitions, and syllogisms; conditions, kinds, developments of paragraphs; selection of topics, themes, titles, and outlining; introductory chapter, issues, analysis, and conclusions; initial complementation and final complementation; typing, citations, and referencesStudy and examination requirements and forms of examinationMidterm test $$ 40%Final Test $$ 40%Attendance, quizzes, homework $$ 20%Laboratory Work		sentence patterns, effective se	ntences, and	sentence variation;
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Media employed Slides boards online communication internet exercises				
Media employed Slides boards online communication internet exercises			-	-
	Media employed	Slides, boards, online communication, internet, exercises		

Reading list	 Alwi Hasan.et.al. Tata Bahasa Baku Bahasa Indonesia. Jakarta : Balai Pustaka, 1998.
	 Depdikbud. RI. Kamus Umum Bahasa Indonesia Jakarta ; Balai Pustaka. 2000.
	3. Keraf, Gorys, Komposisi. Ende Flores : Nusa Indah 1998
	4. Sosio Komunikasi, KK Ilmu Kemanusiaan, FSRD-ITB 2006 Metode Penulisan Ipteks. Bandung Penerbit ITB.
	 Peraturan Menteri Pendidikan Nasional RI no. 46 tahun 2009. Pedoman Umum Bahasa Indonesia yang Dieempurnakan.
	 Depdiknas RI. Keputusan Menteri Pendidikan Nasional no. 146/U/2004 tgl 12 Nov 2004.Pedoman Umum Pembentukan Istilah.

11. Sports

Module designation	Sport	
Module level	Bachelor	
Code, if applicable	KU1001	
Sub-heading, if applicable:	-	
Courses included in the	Grant	
module, if applicable:	Sport	
Semester(s) in which	First Year	
module is taught		
Module coordinator(s)	Samsul Bahri, Drs., M.Kes.	
Lecturer(s)	Samsul Bahri, Drs., M.Kes.	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be non	
	quizzes task or homework in some classes. Lecturer	2
	procents course material using modia such as slide in	v
	presents course material using media such as side in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	surrent issues and source material	-
	Supervision and consultation	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss together	
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	\checkmark
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	_
	material	

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12. Introduction to Engineering & Design

Module designation	Introduction to Engineering & Design	
Module level	Bachelor	
Code, if applicable	KU1202	
Sub-heading, if applicable:	-	
Courses included in the		
module, if applicable:	Introduction to Engineering & Design	
Semester(s) in which	First Year	
module is taught		
Module coordinator(s)	Dr. Taufiq Mulyanto, S.T.	
Lecturer(s)	Dr. Taufiq Mulyanto, S.T.	
Language	Bahasa Indonesia	
Relation to curriculum	General Course / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	ICD projector and whiteboard	
	Presentation	
	Students present course materials in front of class using	
	students present course materials in nont of class using	
	After a recent time, the ward is report what the ward out	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	,
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant ten main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload			
	Class lectures	2 hours	
	Tutorial session	-	
	Supervision and consultation	-	
	Practical or experimental laboratory work	-	
	Individual studies	4 hours	
	Total workload per week	6 hours	
	Presentation	-	
	Class project	-	
	Field trip	-	
	Total workload per semester	96 hours	
Credit points	2		
Requirements prerequisites	-		
Learning Goals			
Knowledge	Skill Competer	nce	
Inderstanding the	Able to relate and apply Possess an evi	tensive	
engineering design	mathematics and basic knowledge to	describe	
process.	sciences to simple engineering d	esign	
Understanding the	engineering problem. process to sol	ve simple	
significance of design	Able to employ tools and engineering problem		
requirements	determined materials to		
Understanding the	fulfill a specific design		
importance of teamwo	requirements.		
in engineering project.			
Content	Class orientation and team preparation, student to	am activities:	
	problem definition and formulation, propose altern	ative solution	
	and conceptual design, experiment/implementation	on of design	
	solution, evaluation of design solution	-	
	Chudowta and considered to be competent and uses if		
requirements and forms of	students are considered to be competent and pass if	the team	
examination	to the degree of accomplishments to design criteria	aue is scaled	
Media employed	Slides, Beamer, boards, computer lab		
Reading list	1. Philip Kosky et al., Exploring Engineering: An Intro	oduction to	
	Engineering and Design, Academic Press, 2010 (main		
	textbook).		
	2. Saeed Moaveni, Engineering Fundamentals: An Introduction to		
	Engineering, Cengage Learning, 2011.		
	3. Holtzapple & Reece, Foundations of Engineering, McGraw-Hill,		
	2003.		
13. Physical Geology

Module designation	Physical Geology		
Module level	Bachelor		
Code, if applicable	GL2111		
Sub-heading, if applicable:	-		
Courses included in the	Physical Geology		
module, if applicable:			
Semester(s) in which module	Third Semester / Second Year		
is taught			
Module coordinator(s)	Alfend Rudyawan		
Lecturer(s)	Alfend Rudyawan, Reynaldy Fifariz, Meli Hadiana		
Language	Bahasa Indonesia		
Relation to curriculum	Major Subject / Compulsory Course		
Type of teaching, contact		<u>. </u>	
hours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer	\checkmark	
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector followed by discussion		
	socsion After procentation they make report what		
	they present before		
	lutorial session		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in	-	
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project and discussion		
	Lecturer gives students a project which related to	-	
	current issues and course material.		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	consults problem which they face and discuss	-	
	together how to solve the problem.		
	Practical or experimental laboratory work		
	Students do practical or experimental in the		
	laboratory according to practical module. Firstly	2	
	laboratory according to practical module. Thistly,	v	
	appriatory assistant ten main ued of practical of		
	Eigld trip		
	visit field area or company which is related to course	N	
	material.		

Workload				
	Class lectures			3 hours
	Tutorial session			-
	Supervision and consultation			-
	Practical or experimental laboratory work			3 hours
	Individual studies			3 hours
	Total workload per week			9 hours
	Presentation			-
	Class project			-
	Field Trip 3 hou			3 hours
	Total workload per	semeste	r	144 hours
Credit points	3			
Requirements prerequisites	-			
Learning Goals				
Knowledge	Skill		Compet	ence
Understanding the	Able to describe t	he	Understand	ding the
objective is giving the	mayor rocks and		obiective is	giving the
student to recognize the	mineral		student to	recognize the
mayor geology feature,			mayor geol	logy feature,
and could describe,	and could describe			describe,
explain, and process the	e explain, and process the			d process the
feature.	feature			
Content	Physical geology is a science which study earth processes			
	planetary science and in	nternal s	tructure of the e	arth, rocks and
	minerals, surficial proc	esses su	ich erosion and	disintegration,
	sedimentation, transpor	t mecha	nism such as rive	ers, beaches as
	well as eonian. Earth qu	lakes and	d tectonics proce	sses, volcanism
	and internal deformation	n of the e	earth covers in thi	s course. Study
	of energy and mineral re	esources	as well as nature	hazard include
Study and avanination	and describe in this cour	se		
requirements and forms of	Midterm test		40%	
examination	Final Test	N	50%	-
	Attendance quizzes	v	5070	60%
	homework	\checkmark	10%	
	Laboratory work	N		40%
		v		4076
Media employed	Slides, beamer, white/bl	ack-boar	ds, online based p	olatform,
	internet, exercises, lab s	pecimen	, etc.	
Reading list	1. Smith and Pun, 2006, Earthworks, Prentice Hall (Main			
	Kelerence).			
	2. Tarbuck and Lugens, 2000, Earth Science, Prentice Hall.			
	3. Hamblin, 1989, The Earth Dynamic System, McMilan.			

14. Pancasila and Civic Education

Module designation	Civic Education	
Module level	Bachelor	
Code, if applicable	KU2071	
Sub-heading, if applicable:	-	
Courses included in the	Civic Education	
module, if applicable:		
Semester(s) in which	Fifth Semester / Third Year	
module is taught		
Module coordinator(s)	Dr. Prima Rosa, M.Ed	
Lecturer(s)	Dr. Prima Rosa, M.Ed	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	_
	groups. Lecturer checks how they solve the problem in	
	turns	
	Class project and discussion	
	Lecturer gives students a project which related to	
	current issues and course material	_
	Current issues and consultation	
	This activity is continuation of class project. Students	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss together	
	now to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload				
	Class lectures			2 hours
	Tutorial session			-
	Supervision and consultation			-
	Practical or experimental laboratory work			-
	Individual studies			4 hours
	Total workload per week6 hours			
	Presentation -			
	Class project -			
	Field trip			
	Tota	I workload per semeste	r	84 hours
		·		
Credit points	2			
Requirements prerequisites	-			
Learning Goals				
Knowledge		Skill		Competence
Enhance nationalism.		Able to describe the second seco	ne • Po	ssesses an extensive
Have motivation to b	e a	nationalism.	knowledge to describe	
good citizen.		Able to describe h	ow na	tionalism and how to
Commit to implemen	t	to be a good citize	n. be	a good citizen
the Five Principles as	he Five Principles as the			
philosophy of nation	in			
social lives.				
Commit to build a go	od			
governance.				
Respect and obey the	é			
laws and human right	t.			
Actively participate ir	า			
socializing democracy	/			
Contont	(1) D	anassila as philosophy	and the group	dad of Indonasian stata
Content	(1). P	ational identity (3) Polit	ic and strategi	(4) The autonomy area
	(2). N	he good and clean gove	ernance (6) T	he culture of democracy
	(3). T	he civil society (8). Supre	eme laws (9) T	he declaration of Human
	Right	(10). Geopolitics (11). G	eostrategic	
			0 -	
Study and examination				[]
requirements and forms of	Mid	term test	V	30%
examination	Fina	l Test	\checkmark	35%
	Pres	entation, quizzes,		35%
	hom	nework	۲	
	Labo	oratory work	-	-
Media employed	Slides	s, Beamer, boards, interr	net, exercises,	workstation

Reading list	1. Pendidikan Kewarganegaraan: Paradigma Terbaru untuk
	Mahasiswa, Alfabeta, Bandung, 2010.
	2. Ubaidillah dan Abdul Razaq, Pancasila, Demokrasi, HAM dan
	Masyarakat Madani, Prenada Media Group, Jakarta, 2012.
	3. Affan Gaffar, Politik Indonesia: Transisi Menuju Demokrasi,
	Pustaka Pelajar Offset, Yogjakarta, 2000.
	4. Kaelan, Pendidikan Kewarganegaraan Untuk Mahasiswa,
	Pustaka Pelajar, Yogyakarta, 2011.
	5. Kaelan, Negara Kebangsaan Pancasila; Kultural, Historis,
	Filosofis, Yuridis, dan Aktualisasinya, Paradigma, Yogyakarta,
	2013.

15. Geomathematics 1

Module designation	Geomathematics 1	
Module level	Bachelor	
Code, if applicable	TG2101	
Sub-heading, if applicable:	-	
Courses included in the	Geomathematics 1	
module, if applicable:		
Semester(s) in which	Third Semester Semester / Second Year	
module is taught		
Module coordinator(s)	Dr. Tedy Setiawan	
Lecturer(s)	Ignatius Sonny Winardhie PhD, Dr. Tedy Setiawan	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	_
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	concults problem which they face and discuss together	-
	how to solve the problem	
	now to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload				
	Class lect	ures		3 hours
	Tutorial s	ession		3 hours
	Supervisio	on and consultation	on	-
	Practical	or experimental la	aboratory work	-
	Individua	l studies		3 hours
	Total wor	kload per week		9 hours
	Presentat	ion		-
	Class proj	ect		-
	Field trip			-
	Total workload per semester		144 hours	
Credit points	3			
Requirements prerequisites	1. MA1101 Mathematics IA.			
	2. MA1201 Mathematics IIA.			
Learning Goals				
Knowladza	chill		Compotonco	

Knowledge	Skill	Competence	
Understanding series,	• Able to do series,	Possess an extensive	
matrix and linear	convergence test.	knowledge of using	
algebra, complex	 Able to solve 	convergence test in series.	
numbers. Partial	matrix and linear	Possess an extensive	
differential, multiple	algebra.	knowledge of using complex	
integral, curl,	 Able to solve 	numbers and applications.	
divergence, and	multiple integral.	Possess an extensive	
stokes theorem.	Able to solve	knowledge of using complex	
Understanding	simple partial	numbers and applications.	
complex number and	differential	Possess an extensive	
applications	equations.	knowledge of solving linear	
Understanding		algebra for simple modeling	
divergence, curl, and		system.	
stokes theorem		Possess an extensive	
		knowledge of solving simple	
		physics problems described	
		as 1st or 2nd order ordinary	
		differential equations.	
		Possess an extensive	
		knowledge of solving simple	
		physics problems described	
		as partial differential	
		equations.	
		Possess an extensive	
		knowledge of using stokes	
		theorem for applications in	
		simple geophysics problem.	

Content	Series: geometric series, convergence test, power series, expanding			
	functions in power series; Complex numbers: real and imaginary			
	parts, complex algebra, Euler's formula, functions of trigonometric,			
	exponential, hyperbolic and logarithm; Linear algebra: matrices, row			
	reductions, determinant, vector, lines and planes, matrix			
	operations: Partial differential: power series in two variables total			
	differential chain rule implicit differential change of usrichlass			
	differential, chain rule, implicit differential, change of variables;			nes,
	Wultiple Integral: double an	id triple integra	is, change of variat	lies,
	surface integrals; Vector ana	ilysis: directiona	il derivative, diverge	ence
	theorem, curl and Stokes the	eorem		
Study and examination				
requirements and forms of	Midterm test		30%	
examination	Final Test		40%	
	Presentation, quizzes,		200/	
	homework	N	30%	
	Laboratory work	-	-	
Media employed	Slides, beamer, boards, appr	opriate softwar	e, online	
	communication, internet, ex	ercises		
Reading list	1. Mary L. Boas, Ma	athematical Me	ethod in the Phys	sical
	Sciences, John Wiley	& Sons, Third E	dition, 2006.	
	2 Erwin Kreyszig Adv	anced Engineer	ing Mathematics I	ohn
	2. LI WIT KIEVSZIG, AUV	2. Erwin Kreyszig, Advanced Engineering Mathematics, John		
	whey & Sons, Inc. N	inth Eartion, 200	ס.	

16. Wave in Geophysics

Module designation	Wave in Geophysics		
Module level	Bachelor		
Code, if applicable	TG2102		
Sub-heading, if applicable:	-		
Courses included in the	Wave in Geophysics		
module, if applicable:			
Semester(s) in which module	Fourth Semester / Second Year		
is taught			
Module coordinator(s)	Atnimar, Ph.D.		
Lecturer(s)	Afnimar, Ph.D., Dr. Tedi Yudistira, S.Si.,M.Si., Dr.rer.nat. A	ndri	
	Hendriyana, ST.,MT., Dr. Fernando Lawrens, ST.,MT.		
Language	Bahasa Indonesia		
Relation to curriculum	Major Subject / Compulsory Course		
Type of teaching, contact			
hours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer		
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector, followed by discussion	-	
	session. After presentation, they make report what		
	they present before.		
	Tutorial session		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in		
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project and discussion		
	Lecturer gives students a project which related to	_	
	current issues and course material		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	approximation of class project. Students	-	
	to asther house asks the weekley		
	Destination of the solve the problem.		
	Practical or experimental laboratory work		
	Students do practical or experimental in the		
	laboratory according to practical module. Firstly,	-	
	laboratory assistant tell main idea of practical or		
	experimental. They do the practical afterwards.		
	Field trip		
	Visit field area or company which is related to course	-	
	material.		

Workload			
	Class lectures		3 hours
	Tutorial session		3 hours
	Supervision and consultation	-	
	Practical or experimental labo	ratory work	-
	Individual studies		3 hours
	Total workload per week		9 hours
	Presentation		-
	Class project		-
	Field Trip		-
	Total workload per semester		144 hours
	•		II
Credit points	3		
Requirements prerequisites	1. FI1101 Physics IA.		
	2. FI1201 Physics IIA.		
Learning Goals			
Knowledge	Skill	Competen	ce
Understanding physics of	• Able to understand the	Possess the abil	ity on bring
transversal waves on a	wave characteristics on a	the wave charac	cteristics on
string.	string and their relation	a string to se	eismic and
Understanding the	to more complex waves.	electromagnetic	waves.
seismic waves	s Able to understand many Possess the ability		ability on
formulation.	phenomena of seismic	distinguish th	e particle
Understanding	wave propagation	oscillation betw	een P and S
propagation of	related to the subsurface waves.		
electromagnetic waves in	structure.	 Possess the 	ability on
the earth.	• Able to understand some	determine th	e seismic
	phenomena of	wave phenome	na such as
	electromagnetic wave.	reflection,	diffraction,
		attenuation et	c., due to
		subsurface strue	cture.
		• Possess the	ability on
		distinguish the	oscillation
		between seis	smic and
		electromagnetic	waves.
		• Possess the	ability on
		identify	the
		electromagnetic	: wave
		reflection	characters
		related to	recording
		responses.	
L			

Content	Introduction: Transversal interference, energy, ref stress and strain, const potential equation; Plane and transmission of plan Love wave, geometrical of Eikonal equation, tran principle, exploding refl principle, physical dispers point source: near field, their characteristics; Elect wave equations, plane w transmission of EM wave	waves on a string lection and trans itutive relation, e wave: plane wa e waves; Surface dispersion; Ray tra sport equation; ector; Attenuatio sion; Wave solutio middle field, and tromagnetic (EM) ave solution of EN s	g: formulation, solution, smission; Elastic waves: elastic wave equation, ave equation, reflection waves: Rayleigh wave, acing: Fermat principle, Diffraction: Huygens on: attenuation basic on from a double-couple I far field solutions and wave: Maxwell law, EM M waves, reflection and
Study and examination		1	1001
requirements and forms of	Midterm test	N	40%
examination	Final Test		40%
	Attendance, quizzes, homework	\checkmark	20%
	Laboratory work	-	-
Media employed	Slides, beamer, boards, ir	nternet, exercises	, etc.
Reading list	1. M. O. Tjia, Gelomban	g, Dabara Publish	iers, 1994.
	 S. Stein & M. Wysession, An Introduction to Seismology, Earthquakes and Earth Structure, Blackwell Publishing, 2003. T. Lay & T. C. Wallace, Modern Global Seismology, Academic Proce 1995 		

17. Basic Geophysics

Module designation	Introduction to Geophysics	
Module level	Bachelor	
Code, if applicable	TG2103	
Sub-heading, if applicable:	-	
Courses included in the	Introduction to Coonducies	
module, if applicable:		
Semester(s) in which	Third Semester / Second Year	
module is taught		
Module coordinator(s)	Prof. Satria Bijaksana	
Lecturer(s)	Prof. Satria Bijaksana, Prof. Djoko Santoso, Dr. Fatkhan, Silv	/ia
	Jannatul Fajar, M.T., Dr. Shindy Rosalia, Faridz Nizar A., M.T	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		<u>. </u>
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	bow to solve the problem	
	Dractical or experimental laboratory work	
	Studente de prosticel er evrevineentel in the leberstery	
	Students do practical or experimental in the laboratory	1
	according to practical module. Firstly, laboratory	ν
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload						
	Class lectures 2 hours					
	Tutorial session	-				
	Supervision and consultation -					
	Practical or experimental laboratory work 1 hour					
	Individual studies 4 hours					
	Total workload per week		6 hours			
	Presentation		-			
	Class project -					
	Field trip		-			
	Total workload per semeste	r	96 hours			
Credit noints	2					
Requirements prerequisites	-					
Learning Goals						
5						
Knowledge	Skill	Compet	ence			
Understanding earth	Able to do basic seisn	nic • Pos	sess an extensive			
structure, earthquake,	modeling	kno	wledge of the			
concept of plate	• Able to do basic	geo	physical methods			
tectonics and explorat	ion experiment to	con	cepts.			
geophysics	understand physical					
	properties in geophysics					
Content	The course is intended to cov	er physical pa	rameters and earth			
	interior structures based on g	geophysical me	ethods. Students are			
	expected to know how to obt	ain physical pa	arameter and earth			
Study and examination		geophysical me	ethous			
requirements and forms of	Midterm test		30%			
examination	Final Test	$\overline{\mathbf{v}}$	40%			
	Attendance quizzes		10/0			
	homework	\checkmark	-			
	Laboratory work		30%			
Media employed	Whiteboard, laptop/compute	er, presentatio	n slides, video			
	&animation, and internet					
Reading list	1. Butler, R.F., Paleomag	gnetism: Magr	ietic Domains to			
	2 Eowler C M B the S	alid Earth Can	nic, 1992. hridge University Press			
	(2 nd edition) 2005					
	3 Kearey P. dan F.I. Vine Global Tectonics Blackwell					
	Scientific Publications	s, 1990.				
	4. Ludman, A., dan N.K.	Coch, Physica	Geology, McGraw-Hill.			
	Inc., 1982.					
	5. Plummer, C.C., D. Mc	Geary, dan D.I	H. Carlson, Physical			
	Geology, McGraw-Hill, Inc., 2001.					

6. Geophysical Instrumentation

Module designation	Geophysical Instrumentation	
Module level	Bachelor	
Code, if applicable	TG2104	
Sub-heading, if applicable:	-	
Courses included in the	Geophysical Instrumentation	
module, if applicable:		
Semester(s) in which	Third Semester / Second Year	
module is taught		
Module coordinator(s)	Dr. Tedy Setiawan	
Lecturer(s)	Dr. Tedy Setiawan, Dr. Warsa	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory course	
Type of teaching, contact		
nours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	_
	groups. Lecturer checks how they solve the problem in	
	turns	
	Class region and discussion	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	_
	assistant tell main idea of practical or experimental	
	They do the practical afterwards	
	Field trip	
	Visit field area or company which is related to cover	
	visit field area of company which is related to course	-

Workload		
	Class lectures	3 hours
	Tutorial session	1 hours
	Supervision and consultation	
	Practical or experimental laboratory work	2 hours
	Individual studies	3 hours
	Total workload per week	9 hours
	Presentation	
	Class project	
	Field trip	
	Total workload per semester	144 hours
Credit points	3	
Requirements prerequisites		

Learning Goals

Knowledge	Skill	Competence
Understanding the use of	 Able to operating series 	Possess an extensive
electric circuit including series	and parallel circuits	knowledge of using
and parallel circuits and op-	Familiar in	electrical circuit.
amp	reconstructing sensor,	 Possess an extensive
 Understanding concept of 	transducer and connect	knowledge of using
signal processing	with microcontroller	sensor transducer and its
Understanding characteristic of	 Able to deliver concept 	application'
electronical instrumentation	of basic electronical	 Familiar with signal
 Understanding the use of 	instrumentation and	processing and basic of
sensor and transducer	signal processing	electronical
		instrumentation

Content Study and examination	Basic configuration of instrumentation system, instrumentation characteristics, components of instrumentation, properties of electronic instrumentation. Examples of electronic instrumentation platform for recently geophysical application and future development.			
requirements and forms of	Midterm test	\checkmark	35%]
examination	Final Test	\checkmark	45%	
	Presentation, quizzes, homework	\checkmark	20%	
	Laboratory work	-	-	
Media employed	Conventional lectures using whiteboard, computer, etc., computer exercises, video courses from internet, etc.			
Reading list	 Webster, Medical Instrumentation: Application and Design, Houghton Mifflin Company, 1996 Jacon Fraden, Handbook of modern sensor: Physics, Design and Applications, , AIP press, Springer-Verlag, New York, 1996 Rangan, Sarma, Mani, Instrumentation: Devide and System, Tata Mc, Graw-Hill, 1992 			

7. Computing in Geophysics

Module designation	Geophysical Computation	
Module level	Bachelor	
Code, if applicable	TG2105	
Sub-heading, if applicable:		
Courses included in the	Geophysical Computation	
module, if applicable:		
Semester(s) in which module	Fourth Semester / Second Year	
is taught		
Module coordinator(s)	Dr. Darharta Dahrin	
Lecturer(s)	Dr. Darharta Dahrin, Dr. Setianingsih, Dr. Indra Gunawan	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	_
	session. After presentation, they make report what	
	they present before	
	lutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project	
	Lecturer gives students a project which related to	\checkmark
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	\checkmark
	together how to solve the problem	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	,
	laboratory according to practical module. Firstly,	\checkmark
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload					
	Class lectures 3 hours				
	Tutorial session	-			
	Supervision and consultation	-			
	Practical or experimental laboration	atory work 3 hours			
	Individual studies 3 hour				
	Total workload per week 9 hours				
	Presentation -				
	Class project	-			
	Field Trip -				
	Total workload per semester	144 hours			
Credit points	3				
Requirements prerequisites	 MA1101 Mathematics IA MA1201 Mathematics IIA 	 A.			
Recommended prerequisites	-				
Learning Goals					
Knowledge	Skill	Competence			
Understanding numerical	Able to do data	 Possess the ability on 			
approach and software	processing and modelling	data processing and			
utilization	in geophysical exploration	geophysical modelling in			
	Able to create and refine	computation.			
	simple program in				
	computation				
Content	Introduction, programming a	nd modeling in geophysics: 1	1.		
	Mathematical model, 2. Compu	ter, 3. Algorithm, 4 Program, 5	5.		
	Error analysis, 6. Data processi	ng and modeling in geophysics	;s,		
	linear equation in geophysics pro	blem, 1. Matrix, 2. Matrix inverse	e,		
	decomposition LO, Gauss Seider,	etc. Curve fitting for analysis an	n		
	interpolation and approximati	on: 1 Linear and polynomiz	n, al		
	regression, 2. Newton intern	olating polynomials, 3, Splin	าย		
	interpolation. Numerical diffe	rentiation and integration: 2	1.		
	Numerical differentiation, 2. Ne	wton-cotes integration formula	IS,		
	partial differential equation fo	r potential geophysics (gravity	y,		
	magnetics, geoelectrics, heat, etc.): finite difference, finite				
	element. Optimization				
Study and examination					
requirements and forms of	Midterm test $$	30%			
examination	Final Test √	35%			
	Attendance, quizzes,	4.00/			
	homework	10%			
	Laboratory work $$	25%			
	· · · · ·				

Media employed	Slides, beamer, whiteboards, appropriate software, online				
	communication, onlne/internet based platform, etc.				
Reading list	1. Chapra, S.C. and Canale, R.P., Numerical Methods for				
	Engineering, 5th Ed., McGraw Hill, 2006.				
	2. Press, W.H., Flannery, B.P., Teukolsky, S.A., Vetterling, W.T.				
	Numerical Recipes. Cambridge University Press, 1986.				
	3. O'Brien, S.K., Nameroff, S. Turbo Pascal 7:The Complete				
	Reference. Mc. Graw-Hill, 1993.				
	4. Blakely, R.J., Potential Theory in Gravity & Magnetic				
	Applications, Cambridge Univ. Press, 1996.				
	5. Parasnis, D.S. Applied Geophysics. Cambridge University				
	Press, 1981.				

8. Introduction on Surveying

Module designation	Introduction on Surveying		
Module level	Bachelor		
Code, if applicable	GD2001		
Sub-heading, if applicable:	-		
Courses included in the	Introduction on Surveying		
module, if applicable:			
Semester(s) in which module	Fourth Semester / Second Year		
is taught			
Module coordinator(s)	Dr. Hasanudin Z. Abidin		
Lecturer(s)	Rizqi Abdulharis, Andri Hernandi, Alfita Puspa Handayani,	Ratri	
	Widyastuti, Dwi Wisayantono, Fickrie Muhammad		
Language	Bahasa Indonesia		
Relation to curriculum	Major Subject / Compulsory Course		
Type of teaching, contact			
hours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer	\checkmark	
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector, followed by discussion	-	
	session. After presentation, they make report what		
	they present before.		
	Tutorial session		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in	-	
	groups. Lecturer checks how they solve the problem		
	Class project		
	Lecturer gives students a project which related to	-	
	Supervision and consultation		
	This activity is continuation of class project. Students	-	
	consults problem which they face and discuss		
	Practical or experimental laboratory work		
	Students do practical or experimental in the	_	
	laboratory according to practical module. Firstly,	_	
	experimental They do the practical afterwards		
	Field trin		
	Visit field area or company which is related to servere	_	
	visit neiu area or company which is related to course material		
	Visit field area or company which is related to course material.	-	

Workload					
WORKIOAU					
		2 110015			
	lutorial session	-			
	Supervision and consul	tation	-		
	Practical or experiment	al laboratory wo	ork -		
	Individual studies		4 hours		
	Total workload per wee	ek	6 hours		
	Presentation		-		
	Class project		-		
	Field Trip		-		
	Total workload per sem	nester	96 hours		
Credit points	2				
Requirements prerequisites	-				
Recommended prerequisites	-				
Learning Goals					
Knowledge	SKIII		Competence		
Onderstanding diverse mapping coordinate	 Able to process large scale mapping as w 	yell as	sess the ability on		
system tonographical	reading and intern	ernreting the			
mapping and shake-out	information on mans and mapping				
	utilizing them for various				
	purposes.				
Content	Map and Function of Ma	p: Geographic O	biect Position and		
	Coordinate System: Hori	zontal and Vertic	cal Positioning:		
	Horizontal Positioning M	lethods; Angle ar	nd Distance		
	Measurement; Vertical F	Positioning Meth	od; Profile; Large-Scale		
	Mapping; Area and Volu	me Calculation; I	Map and Image		
	Interpretation; Planning	Map; Stake-Out;	Review Position and		
	Positioning				
Study and examination					
requirements and forms of	Midterm test	30%			
examination	Final Test	\checkmark	35%		
	Attendance, quizzes,		35%		
	homework	v	3370		
	Laboratory work	-	-		
Madia employed	Slides beamer whitehe	ards appropriate	software online		
	communication online/i	internet based p	atform etc		
Reading list	-	nternet based p			

9.	Introduction	to	Mineralogy	and	Petrology
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Module designation	Introduction to Mineralogy and Petrology	
Module level	Bachelor	
Code, if applicable	GL2141	
Sub-heading, if applicable:	-	
Courses included in the	Crystallography and Mineralogy	
module, if applicable:		
Semester(s) in which module	Third Semester / Second Year	
is taught		
Module coordinator(s)	I Gusti Bagus Eddy Sucipta	
Lecturer(s)	I Gusti Bagus Eddy Sucipta	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	_
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	_
	groups Lecturer checks how they solve the problem	
	in turns	
	Class project and discussion	
	Lecturer gives students a project which related to	
	current issues and course material	_
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem	
	Dractical or experimental laboratory work	
	Students de prestieel er experimental in the	
	In the second ing to practical medule. Firstly	
	laboratory according to practical module. Firstly,	ν
	apprimental. They do the prestical of the prestical of	
	experimental. They do the practical afterwards.	
	riela trip	
	visit field area or company which is related to course	-
	materiai.	

Workload					
	Clas	s lectures			3 hours
	Tutorial session		-		
	Sup	ervision and consu	ltation		-
	Prac	ctical or experimen	tal laborator	y work	3 hours
	Indi	vidual studies			3 hours
	Tota	Total workload per week			9 hours
	Pres	Presentation			-
	Clas	Class project			-
	Field	Field Trip			-
	Tota	al workload per sen	nester		144 hours
Credit points	2				
Requirements prerequisites	3 22 G	1 2111 Physical Go	ology		
Requirements prerequisites	25. 0	il 2111 Physical Ge	ology		
Learning Goals					
Knowledge		Skill		Compe	tence
Understanding the objec	tive is	• Able to the		Possess	the ability
giving to student, how th	e	identification	n of crystal	on ident	ifying
nature of ordering physic	cal	form throug	n wooden	Crystal a	nd mineral
and chemical bond and it	ts	"ideal crysta	"	for rocks	s by its
appearance in crystal for	m;	 Able to recog 	gnize	identity	and its
besides the student shou	ıld	crystal and n	nineral in	characte	er
identify "wooden"ideal c	rystal	ideal rock			
in sterodiagram. The lect	urer				
explain, how to identify					
mineral and its physical					
character in nature, its					
association in rocks of					
pyroclastic, sedimentary,	,				
metamorphic, gemstone	, and				
the alteration.					
Content	The le	cture examines the	e crystal axes	s and its project	ion to know
	the cr	ystal system on the	e ideal miner	als, included th	e symmetry
	eleme	ents of crystal, repe	tition, growt	h-twinning pat	tern, physical
	and ch	nemical character f	or minerals i	dentification. T	he lecture
	also e	xplains mineral ass	ociation to f	orm igneous, py	vroclastic,
	sedim	entary and metam	orphic rocks,	, as well as mine	eral
	associ	ation in economic	deposits and	gemstones	
Study and examination					
requirements and forms of	Midt	erm test		40%	
examination	Final	Test		50%	60%
	Atter	ndance, quizzes,	2	10%	0078
	hom	ework	v	1070	
	Labo	ratory work			40%
Media employed	Slides,	, beamer, white/bla	ack-boards, o	online based pla	attorm,
	intern	et, exercises, lab sp	pecimen, etc	•	

Reading list	1.	Bonewitz RL, 2005, Rocks and Gems, the definitive guide to
		rocks, minerals, gems and fossils, DK Publishing, New
		YorkUSA, 360p.
	2.	Chang R., 1998, Chemistry, sixth edisions, WCB McGraw Hill,
		New York USA, 993p.
	3.	Jensen ML & Bateman AM, 1981, Economic Mineral Deposits,
		John Willey and Sons Inc., New York USA, 589p.
	4.	Klein C. & Hulburt CS., 1993, Manual of Mineralogy, Jhon
		Willey and Sons Inc., New York USA, 681p.
	5.	Klein C., 1989, Minerals and Rocks: Exercises in
		Crystallography, Mineralogy and Hand-Specimen Petrology,
		John Willey and Sons Inc., New YorkUSA, 402p.
	6.	Philips WJ & Philips N, 1980, An Introduction to Mineralogy
		for Geologists, John Willey and Sons Inc., New York USA,
		352p.
	7.	Rose A.W., Hawkes H.E & Webb J.S., 1979, Geochemistry in
		Mineral Exploration, Academic Press, London, UK.

10. Religion and Ethics (Islamic)

Module designation	Religion & Ethics (Islamic)	
Module level	Bachelor	
Code, if applicable	KU2061	
Sub-heading, if applicable:	-	
Courses included in the	Religion & Ethics	
module, if applicable:		
Semester(s) in which module	Fourth Semester / Second Year	
is taught		
Module coordinator(s)	Dr. Asep Zaenal Ausop, M.Ag.	
Lecturer(s)	Dr. Asep Zaenal Ausop, M.Ag.	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem	
	in turns.	
	Class project	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly.	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	_
	material.	

Workload				
	Class lectures		2 hours	
	Tutorial session		-	
	Supervision and consulta	-		
	Practical or experimenta	k -		
	Individual studies	4 hours		
	Total workload per weel	ĸ	6 hours	
	Presentation		-	
	Class project		_	
	Eield Trin			
	Total workload per seme	ostor	96 hours	
			50110013	
Credit points	2			
Requirements prerequisites	-			
·····				
Recommended prerequisites	-			
Learning Goals				
5				
Knowledge	Skill	C	Competence	
Understanding Islamic		Imple	menting the ethics	
teachings.		on da	ilv life.	
Believing the truth of		 Impro 	, iving behavior on	
Islam.	social life			
Improving the faith on	 Implementing good 			
Islam.		relatio	on to human beings.	
		Imple	menting Islamic	
		values	s on any activities.	
Content	1). The relationship between t	the natural laws and	d religion laws (2). The	
	standing position and the func	tion of human beir	ng (3). The holistic of Islam	
	(4). Algur an as the first refere	nce of Islam (5). Al-	Sunnah as the second of	
	Islam references (6). Ijtihad: th	ne methodology of	Islamic justice laws (7).	
	The ethics toward Allah and h	is messenger (8). Th	ne function of ritual (9).	
	The ethics of human relations	hip (10). The ethic c	of science, technology and	
	art development (11). The Eth	ics of politic activiti	es (12). Madany Society/	
	Civil Society (13). The principle	es of Islamic banking	5	
Study and examination				
requirements and forms of	Midtorm tost		200/	
evamination	Final Test	N	20%	
	Attendence guizzes	N	50%	
	homework	\checkmark	40%	
		-	-	
Media employed	Slides, boards, visualizers,	online communio	cation, internet,	
	exercises			

Reading list	1.	Quraisy Shihab, Tafsir Al-Misbah: Pesan, Kesan dan
		Keserasian Alqur'an, Lentera Hati, Ciputat Tangerang, 2002.
	2.	Miftah Faridl, Pokok-pokok Ajaran Islam, Pustaka Salman
		ITB, Bandung, 2000.
	3.	Asep Zaenal Ausop, Quranic Character Building:
		Mewujudkan Muslim yang Berkarakter Qur'ani, Grafindo,
		Bandung, 2013.
	4.	Hamdan Manshur, dkk, Material Insteruksional Pendidikan
		Agama Islam.
	5.	untuk Perguruan Tinggi Umum, Direktorat Pendidikan
		Tinggi Islam, Depag, 2006.
	6.	Munawar Khalil, Kembali kepada Alqur'an dan Sunnah,
		Bulan Bintang, Jakarta, 1973.
	7.	Cecep Alba, Tasawuf dan Tarekat : Dimensi Esoteris Ajaran
		Islam, Rosda Karya, Bandung, 2012.

11. Geomathematics II

Module designation	Geomathematics II	
Module level	Bachelor	
Code, if applicable	TG2203	
Sub-heading, if applicable:	-	
Courses included in the	Geomathematics II	
module, if applicable:		
Semester(s) in which module	Fourth Semester / Second Year	
is taught		
Module coordinator(s)	Prof. Satria Bijaksana	
Lecturer(s)	Prof. Dr. Satria Bijaksana, Silvia Jannatul Fajar ST,MT, Dr.	Tedy
	Setiawan, Dr. Shindy Rosalia S.T., M.T., Dr. Tedi Yudistira,	
	S.Si.,M.Si., Dr.rer.nat. Andri Hendriyana, ST,MT	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Lecturer gives students some problem beforeband. In	
	class students explain how to solve the problem in	2
	groups Lecturer checks how they solve the problem in	N
	in turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload			
	Class lectures	3 hours	
	Tutorial session	3 hours	
	Supervision and	consultation -	
	Practical or ever	erimental laboratory work	-
	Total workload		_
		per week 9 hours	_
	Presentation	-	
	Class project	-	
	Field Trip	-	
	Total workload	per semester 144 hours	5
Credit points	3		
Requirements prerequisite	es 1. MA1101 Math	nematics IA.	
	2. MA1201 Math	nematics IIA.	
	3. TG2101 Geom	nathematics I.	
Learning Goals			
Learning Oodis	CL:II	Compotonco	
Knowledge	SKIII	Competence	
Onderstanding Eourier analyses	Able to proficient in using Fourier	Possess the ability of using Fourier series and Equator transform in simple	
Fourier analyses,	in using Fourier	signal analysis	
Fourier series,	series and Fourier	Signal analyses.	
transform	Able to proficient	 Possess the ability on using coordinate transformation as mean to solve simple 	_
Understanding	• Able to proficient	nhysics problems	-
	transformation	Physics problems.	
transformation		Possess the ability of solving simple Figen value cases such as stress strein	
Eigen values and	Able to solve Eigen value	tonsor as well as magnetic	
Eigen voctors	rigell value	curson tibility topsor	
Eigen vectors.	problems.	Descess the ability on solving simple	
Onuerstanding ordinary	Able to solve simple ordinary	Possess the ability of solving simple physics problems described as 1st or	
differential	differential	2nd order ordinary differential	
aguations	unrerentian	2110 of der of dinary differential	
equations.	Able to solve	motions failing object with air friction	
Onderstanding partial differential	Able to solve simple partial	otc)	
	differential	 Possess the ability on solving simple 	
equations.	oquations	Possess the ability of solving simple physics problems described as partial	
	equations.	differential equations (wave motions in	
		string thermal diffusion etc.)	
		string, thermal diffusion etc.j.	
Content	Fourier analysis: Fou	rier series, complex form of Fourier series, Fourier	
content	transformations Fou	rier transformation characteristics introduction of	
	convolution: Coordir	ate transformations: Cartesian sphere and cylinder	-
	coordinates linear tr	ransformation eigenvalues eigenvectors diagonal	
	matrices and its ann	lications curvilinear coordinates. Ordinary differenti:	al
	equations: linear first	t-order equations, second-order linear equations with	th
	zero right-hand cide	second-order linear equations with right-hand side	
	not zero. Differential	nartial equations: Lanlace's equation: steady.ctate	
	temperature in a rec	tangular plate one dimension diffusion equation	
	wave equation on a	string	

Study and examination				
requirements and forms of	Midterm test	\checkmark	40%	
examination	Final Test	\checkmark	40%	
	Attendance, quizzes,	2	20%	
	homework	N	2070	
	Laboratory work	-	-	
Media employed	Slides beamer boards a	ppropriate softw	are online	
Wedia employed	Sildes, Dearner, Doards, a		are, online	
	communication, internet	, exercises, etc.		
Reading list	1. Mary L. Boas, Ma	athematical Meth	od in the Physical	
	Sciences, John W	iley & Sons, Third	d Edition, 2006.	
	2. Erwin Kreyszig, A	dvanced Enginee	ring Mathematics, J	ohn
	Wiley & Sons, Inc	c. Ninth Edition, 2	.006.	

12. Potential Theory

Module designation	Potential Theory	
Module level	Bachelor	
Code, if applicable	TG2204	
Sub-heading, if applicable:	-	
Courses included in the	Potential Theory	
module, if applicable:		
Semester(s) in which module	Fourth Semester / Second Year	
is taught		
Module coordinator(s)	Dr. Darharta Dahrin	
Lecturer(s)	Dr. Darharta Dahrin, MS, Dr. Eko Januari Wahyudi, ST,MT,	Dr.
	Setianingsih, ST,MT, Dr. Indra Gunawan, S.Kom.,M.Si., Pro	of.Dr.
	Satria Bijaksana, Faridz Nizar Ahmady, S.T., M.T.	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem	
	in turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	_
	consults problem which they face and discuss	
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	visit field area or company which is related to course	-
	matenal.	

Workload				
	Class lectures	5		2 hours
	Tutorial sessi	on		-
		-		
	Practical or e	xperimental laborato	ory work	-
	Individual stu	ıdies		4 hours
	Total workloa	ad per week		6 hours
	Presentation			-
	Class project			-
	Field Trip			-
	Total workloa	ad per semester		96 hours
Credit points	2			
Requirements prerequisites	1. MA1101 N	lathematics IA.		
	2. MA1201 N	lathematics IIA.		
	3. TG2014 Ge	eophysical Computat	ion.	
	4. TG2203 Ge	eomathematics II.		
Learning Goals				
_				
Knowledge		Skill	Compet	ence
Understanding vector ana	lyses and	Able to	Possess the	ability on
vector manipulation.		proficient in	using vecto	r analyses
Understanding fundamen	tal physics laws	vector	and vector	
related to potential theory	y (Newton laws,	analyses and	manipulatic	on in solving
Gauss law, and Ampere la	w).	vector	simple geop	physics
 Understanding Laplace an 	d Poisson	manipulation.	problem.	
equations.		Able to derive	 Possess the 	ability on
 Understanding mathemat 	ical formulation	or relating	using mathe	ematical
of potential theory in geophysics (gravity,		fundamental	tools to der	ive physical
magnetic, geo-electricity, electro-		laws and	parameters	used in
magnetism, and temperature/heat).		equations into	geophysical	methods.
Understanding applications of potential		geophysical	 Possess the determining 	ability on
theory in geophysics (grav	ity, magnetic,	method.	aetermining	B
geo-electricity, electro-ma	geo-electricity, electro-magnetism, and		annonnate	
geo-electricity, electro-magnetism, and			naramotor	e physical
temperature/neat).	agnetism, and		parameter 1	for

Content Introduction, vector analysis, conservative and non-conservative field, green theorem: divergence and stokes theorem, theorems application in potential field: newton, gauss, and ampere law. Field potential in geophysics: gravity, magnetics, geoelectrics, electromagnetics, and heat; laplace and poisson equation, gravity potential analysis: gravity potential and case studies, magnetics potential analysis: magnetics potential and case studies, geoelectrics potential analysis: geoelectrics potential and case studies, heat (temperature) potential analysis: heat potential and case studies, EM potential analysis: EM potential and case studies. Real case studies

Study and examination				
requirements and forms of	Midterm test		40%	
examination	Final Test		40%	
	Attendance, quizzes, homework	\checkmark	20%	
	Laboratory work	-	-	
Media employed	Slides, beamer, whiteboa communication, internet	ards, appropriate , exercises, etc.	software, online	
Reading list	 Mari L., Boas, Mathe Sciences, 3rd. Ed. Joh Blakely, R.J., Potentia Applications, Cambri Griffiths, D.J., Introdu Prentice Hall, 1999. Turcotte, D.L., and So Telford et.al.Applied 1976. Grant and West, Inte Mc. Graw Hill Book C George Arfken, Math Academic Press Inc., 	matical Methods on Wiley and Sons al Theory in Gravi- dge Univ. Press, 1 uction to Electrod chubert, G., Geod Geophysics, Cam erpretation Theor Company, 1965. Dematical Methoo 1985.	in the Physical s, 2006. ty & Magnetic L996. lynamics, 3rd ed., ynamics, 1982 bridge University Pi y in Applied Geophy ds for Physicists,	ress, ysics,

13. Geostatistics I

Module designation	Geostatistics I		
Module level	Bachelor		
Code, if applicable	TG2201		
Sub-heading, if applicable:	-		
Courses included in the	Geostatistics		
module, if applicable:			
Semester(s) in which	Sixth Semester / Third Year		
module is taught			
Module coordinator(s)	Dr. Darharta Dahrin		
Lecturer(s)	Dr. Darharta Dahrin, MS, Dr. Indra Gunawan, S.Kom.,M.Si., Dr.		
	Warsa S.Si., MT. Dr. Susanti Alawiyah. ST.MT. Ignatius Sonny		
	Winardhie. Ph.D., Ekkal Dinanto, S.T., M.T.		
Language	Bahasa Indonesia		
Belation to curriculum	Major Subject / Compulsory Course		
Type of teaching contact			
hours	Class loctures		
nours	Lecturer teaches students in class. There will be non		
	auizzes task or homework in some classes lecturer	2	
	presents course material using media such as slide in	v	
	ICD projector and whiteboard		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector, followed by discussion	_	
	session. After presentation, they make report what		
	they present before.		
	Tutorial session		
	Lecturer gives students some problem beforehand. In		
	class students explain how to solve the problem in	-	
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project and discussion		
	Lecturer gives students a project which related to	-	
	current issues and course material.		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	consults problem which they face and discuss together	-	
	how to solve the problem.		
	Practical or experimental laboratory work		
	Students do practical or experimental in the laboratory		
	according to practical module. Firstly, laboratory	\checkmark	
	assistant tell main idea of practical or experimental.		
	They do the practical afterwards.		
	Field trip		
	Visit field area or company which is related to course	-	
	material.		

Workload				
	Class lectures	2 hours		
	Tutorial session	-		
	Supervision and consultation	-		
	Practical or experimental labora	atory work 1 hours		
	Individual studies	6 hours		
	Total workload per week	9 hours		
	Presentation	-		
	Class project -			
	Field trip -			
	Total workload per semester	144 hours		
Credit points	3			
Requirements prerequisites	1. TG2101 Geomathematics I.			
	2. TG2111 Introduction to Geophysics.			
	3. GL2111 Physical Geology.			
Learning Goals				
Knowledge	Skill	Competence		
Students are able to	Process and	Possesses an		
process geophysical	cal interpretation extensive knowledge			
data by using	ng geostatistics data to describe the			
geostatistic and able	2	application of		
to optimize it.	geostatistics, optimize			
	it and interpretation			
		geophysical data.		
Content	Introduction, elementary statistics; me	ean. median. modus. variance. standart		
	deviation. Statistics descriptive: Data	aset, Chebyshev's inequality, normal		
	datasets. Element of probability: sam	ple space and event, Venn diagram,		
	algebra of events, axioms of probabili	ity, Bayes formula. Random variables:		
	Type of random variables, probability of	distribution. Mathematics Expectation:		
	expectation, variance, covariance, corre	elation, Chebysev formula. Distribution		
	of sampling statistics: Sample means	s, central limit theorem, the sample		
	variance, sampling distributions fron	n a normal and a finite population.		
	Parameter estimation: Maximum Like	elihood estimator, interval estimates,		
	the Bayes's estimator. Hypothesis testing: Significance levels, the t-test, Chi-			
	test. Regression: Least square estimation	tor of the regression parameters, the		
	coefficient of determination and samp	ble correlation, weighting least square.		
	ANNOVA: One-way analysis of varian	ce, two factor of analysis of variance,		
	Polynomial, Case Study, Reviews.			
Study and examination				
requirements and forms of	Midterm test	√ 45%		
examination	Final Test	√ 35%		
	Presentation, quizzes,	100/		
	homework	v 10%		
	Laboratory work	1.0%		

Media employed	Slides, beamer, whiteboards, appropriate software, online		
	imunication, internet, exercises, etc.		
Reading list	1. Walpole, R.E., Myers, R.H., Myers, S.L. and Ye, K., 2007,		
	 Probability & statistics for Engineers & Scientists, 8th Ed., Pearson Prentice Hall. 2. Davis, J.C., 1986, Statistics and Data Analysis in Geology, 2nd. Ed., John Wiley & Sons. 		
	3. Kelkar, M. And Perez, G., 2002, applied Geostatistics for		
	Reservoir Characterization, SPE Inc. Richardson, Texas.		
	4. Webster, R. And Oliver, M., 2001, Geostatistics for		
	Environmental scientists, John Wiley & Sons		
	5. McGrew, J. C. And Monroe C.B., 2000, An Introduction to		
	Statistical Problem Solving in Geography, McGraw Hill.		
	6. Webster, R. And Oliver, M., 2001, Geostatistics for		
	Environmental scientists, John Wiley & Sons.		

14. Seismology

Module designation	Seismology				
Module level	Bachelor				
Code, if applicable	TG2231				
Sub-heading, if applicable:	-				
Courses included in the	Seismology				
module, if applicable:					
Semester(s) in which module	Fifth Semester / Third Year				
is taught					
Module coordinator(s)	Afnimar, PhD				
Lecturer(s)	Prof.Dr. Andri Dian Nugraha S.Si., M.Si., Dr. Zulfakriza, S.Si., MT,				
	Dr. Afnimar, M.Sc', Dr. Tedi Yudistira, S.Si., M.Si., Dr. Shinc	dy			
	RosaliaS.T., M.T.				
Language	Bahasa Indonesia				
Relation to curriculum	Major subject / Compulsory Course				
Type of teaching, contact	Class lectures				
nours	Lecturer teaches students in class. There will be pop				
	guizzes, task, or homework in some classes. Lecturer				
	presents course material using media such as slide in				
	LCD projector and whiteboard.				
	Presentation				
	Students present course materials in front of class				
	using slide in LCD projector, followed by discussion	-			
	session. After presentation, they make report what				
	they present before				
	Tutorial session				
	Lecturer gives students some problem beforehand. In				
	class students explain how to solve the problem in	_			
	groups. Lecturer checks how they solve the problem in				
	turns				
	Class project				
	Lecturer gives students a project which related to	_			
	current issues and course material				
	Supervision and consultation				
	This activity is continuation of class project. Students				
	concults problem which they face and discuss	-			
	together how to solve the problem				
	Direction of construction and the problem.				
	Practical or experimental laboratory work				
	Students do practical or experimental in the	1			
	laboratory according to practical module. Firstly,	N			
	laboratory assistant tell main idea of practical or				
	experimental. They do the practical afterwards.				
	Field trip				
	Visit field area or company which is related to course	-			
	material.				
Workload					
---	--	--	--	---	---
		Class lectures			3 hours
		Tutorial session			-
		Supervision and consu	Itat	ion	-
		Practical or experimen	ntal	laboratory work	3 hours
		Individual studies		·	3 hours
		Total workload per week		9 hours	
		Presentation			-
		Class project			-
		Field Trip	-		
		Total workload per ser	mes	iter	144 hours
Credit points	3	<u>}</u>			
Requirements prerequisit	es I	G2205 Wave Theory In	1 Ge	eophysics.	
Recommended prerequis	tes -				
Knowledge	Skill		Co	mpetence	
Understanding the	 Abl 	le to proficient in	•	Possess the ability on de	termining
 Understanding the seismic waves and their recording on three-component seismometer. Understanding the concept of location, source mechanic, and size of an earthquake, and their relation to the plate tectonic. 	 Abl bas ana Abl ear det Una froi its bea me Una bea ear 	le to proficient in sic seismogram alysis. le to do basic rthquake location termination. derstanding the P we radiation pattern om a fault model and relation to the ach-ball of focal echanism. derstanding the sic concept of rthquake size.	•	Possess the ability on de and analyzing the seismi phases recorded on a th component seismomete Possess the ability on es the earthquake location classical methods, such a diagram, graphic method search method and basis gradient method. Familiar in reading "beau focal mechanism and its faulting parameters. Familiar in quantity of m energy and intensity.	etermining c wave ree- r. timating using as wadati d, basic grid c inverse ch-ball" relation to agnitude,
Content	S w n tu s fa fa c d E S p	Seismic waves: elasticit waves; Seismograph: network: types of seis ravel time in a spheric seismic waves from an methods of hypocenter, aults and first motions fault plane representat laskel line source, d concepts and types of determination methods farthquake statistic seismotectonic: the repolate tectonics	y th prin cal e cal e ; Fo s, P tior tior s; Ir c: c: elati	neory, wave equations, typ nciple of seismograph; graph network; Seismograph earth and its characteristic rthquakes; Hypocenter: of cal Mechanism: elastic rela- wave radiation pattern, S as; Modeling of source ti- ctivity, source spectrum; nagnitudes; Energy, con atensity: concept and its of frequency-magnitude on between the previou	bes of seismic Seismological ram: ray and ics, phases of letermination bound theory: Stereographic ime function: Company Magnitude: Cept and its lassifications; relations; is topics and

Study and examination			
examination	Midterm test	\checkmark	30%
	Final Test	\checkmark	30%
	Attendance, quizzes, homework	\checkmark	10%
	Laboratory work		30%
Media employed	Slides, beamer, boards,	internet, exercise	s, etc.
Reading list	 Afnimar, Seismologi S. Stein & M. Wyses Eathquakes and Ear T. Lay & T. C. Wallac Press, 1995. 	, edisi pertama, P sion, An Introduc th Structure, Blac e, Modern Globa	enerbit ITB, 2009. tion to Seimology, kwell Publishing, 2003. I Seismology, Academic

15. Structural Geology

Module designation	Structural Geology	
Module level	Bachelor	
Code, if applicable	GL 2012	
Sub-heading, if applicable:	-	
Courses included in the	Structural Geology	
module, if applicable:		
Semester(s) in which module is taught	Fourth Semester / Second Year	
Module coordinator(s)	Ir. Benyamin Sapiie, Ph.D	
Lecturer(s)	Indra Gunawan, Alfend Rudyawan, Benyamin Sapiie, Chalid	Idham
	Abdullah	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	\checkmark
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload				
	Class lectures		3 hours	
	Tutorial session		3 hours	
	Supervision and consultation		-	
	Practical or experimental labora	tory work	-	
	Individual studies		3 hours	
	Total workload per week	9 hours		
	Presentation			
	Class project		-	
	Field trip -			
	Total workload per semester		144 hours	
Credit points	3			
Requirements prerequisites	GL2251 Principle of Stratigraphy			
	GL2242 Geomorphology			
	GL2103 Petrology			
Learning Goals				
Knowledge	Skill	Competence		
 Understanding the element of geological structure with an important kinematic and dynamic analysis. Understanding the concept of synthetic analysis from tectonic process related to its structure development. 	 Able to identify major structure element through compass data (fault, fracture, lineament, folding). Able to make a description and analysis of the structure. 	 Possess an existence of knowledge of analysis from structure elen 	tensive kinematic the nent.	
Content	Structural geology is study of deformed	d rocks including shape	, geometry and	
	architecture of the crust as well as their geology includes understanding tecton and strain. Identifying, mapping and an such as fractures, folds, faults, foliation, relationship among them in the contex geology techniques in analyzing geolog regions including earthquakes and land trap, economic minerals and engineeri	r deformation mechan ic deformation such as ialyzing various differer , section and lineation a ct of plate tectonic. Appr gical natural disaster in dslides, hydrocarbon m ing geology.	ism. Structural force, stress at structures and their olying structural active tectonic igration and	
Study and examination	Nidtorm to st		0/	
requirements and forms of	Final Tast	<u>v</u> 305	70 0/	
examination	Presentation quizzos	<u>v</u> 305	70	
	homework	√ 409	%	
	Laboratory work			
iviedia employed	Sildes, Beamer, boards, internet, e	exercises, workstatio	n	

Reading list	1.	Davis, G. H., Reynolds, S. J., and Kluth, C. F., 2012, Structural
		Geology of Rock and. Regions: 3rd edition, John and Wiley
		and Sons, Inc., 835 p. (Main Source)
	2.	Fossen, H., 2010, Structural Geology, Cambrige University
		Press. 463 p. (Main Source)
	3.	Twiss, R. J. and Moore, E. M., 1992, Structural Geology: W. H.
		Freeman and Company, 532 .p.
	4.	Marshak and Mitra, (1988), Basic Methods of Structural
		Geology, Prentice-Hall, 441.

16. Sedimentology and Stratigraphy

Module designation	Sedimentology and Stratigraphy	
Module level	Bachelor	
Code, if applicable	GL3053	
Sub-heading, if applicable:	-	
Courses included in the	Sedimentology	
module, if applicable:		
Semester(s) in which module	Third Semester / Second Year	
is taught		
Module coordinator(s)	Dwiharso Nugroho	
Lecturer(s)	1. Dwiharso Nugroho	
	2. Wahyu Probo Ananto	
	3. Reynaldy Fifariz	
	4. Dardji	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
lype of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	.1
	quizzes, task, or homework in some classes. Lecturer	N
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	they present before	
	Tutorial session	
	Lacturar gives students some problem beforehand. In	
	class students evaluate how to solve the problem in	_
	groups Lecturer checks how they solve the problem in	
	turns	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	\checkmark
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	
	1	

Workload			
	Class lectures		3 hours
	Tutorial session		-
	Supervision and consultation		-
	Practical or experimental labora	atory work	3 hours
	Individual studies		3 hours
	Total workload per week		9 hours
	Presentation		-
	Class project		-
	Field Trip		-
	Total workload per semester		144 hours
Credit points	3		
Requirements prerequisites	32. GI 2111 Physical Geology	,	
Requirements prerequisites	33. GL2242 Petrology		
Learning Goals			
Knowledge	Skill	Competence	
Understanding the	Able to description the	Understandi	ng the
objective is student	mayor sedimentary	objective is s	student
understand concept,	rocks from sample	understand o	concept,
theory, and basic law for		theory, and l	basic law for
developing sedimentary		developing s	edimentary
rock, its transporting,		rock, its tran	sporting,
and process either		and process	either
mechanically,		mechanically	Ι,
chemically or organic.		chemically o	r organic.
Content	The course explain about sed	imentary particles	how it was
	formed, transported and depe	osited in term of	mechanical,
	chemical and biological process	es. Explaining about	ut where and
	how sedimentary rocks were de	posited and its cha	racteristic. To
	understand all about sedimenta	ry rocks the course	e started with
	sedimentary texture analysis con	nprising of grain size	e, grain snape
	and grain packing. Based on sedi	ing with mochanic	e sedimentary
	traction and gravity mass flow in	this topic sodimon	tary structure
	and its relation to sedimentary n	rocesses are discus	cad Continue
	with carbonate sedimentation	in which hiologic	al process is
	predominant beside mechanical	and chemical, foll	owing by the
	chemical process of evaporitic	sediments The cou	urse continue
	with sedimentary rocks classific	ation and depositi	onal analysis.
	Depositional analysis comprise of	continental, transit	ional, shallow
	marine and deep marine. The c	ourse ended with	the economic
	potential of sedimentary rocks		

Study and examination				
requirements and forms of	Midterm test		40%	
examination	Final Test		50%	C01/
	Attendance, quizzes,	.1	100/	60%
	homework	N	10%	
	Laboratory work	\checkmark		40%
Media employed	Slides, beamer, white/b	lack-boards	, online based _l	olatform,
	internet, exercises, lab s	pecimen, e	tc.	
Reading list	1. Friedman, GM.,	Sanders, JE	, 1978, Principl	es of
	Sedimentology,	John Wiley	& Sons Inc.	
	2. Collinson, JD., T	hompson, D	B., 1982, Sedin	nentary
	Structures 2nd I	Ed., London	Unwin Hyman,	, 207p.
	3. Mc Lane, M., 19	95, Sedime	ntology, Oxford	d University
	Press Inc., 423p			
	4. Pettijohn, FJ., Po	otter, PE., 1	964, Atlas and (Glossary of
	Primary Sedime	ntary Struct	ure, Springer-\	/erlag, Berlin,
	370p.			

29. Geophysical Signal Analysis

Module designation	Geophysical Signal Analysis	
Module level	Bachelor	
Code, if applicable	TG3110	
Sub-heading, if applicable:	-	
Courses included in the	Geophysical Signal Analysis	
module, if applicable:		
Semester(s) in which module	Fifth Semester / Third Year	
is taught		
Module coordinator(s)	Dr. Alfian	
Lecturer(s)	Prof. Wawan Gunawan A. Kadir, Dr. Alfian, Dr. Eko Januar	i
	Wahyudi	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	,
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project	
	Lecturer gives students a project which related to	_
	current issues and course material	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem	
	Dragtical or experimental laboratory work	
	Studente de prestiel er evreringentel in the	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload				
	Class le	ctures		3 hours
	Tutoria	l session		3 hours
	Supervi	sion and consultation		-
	Practica	al or experimental laborato	ry work	-
	Individu	ual studies		3 hours
	Total w	orkload per week		9 hours
	Present	ation		-
	Class pr	oject		-
	Field Tr	j ip		-
	Total w	orkload per semester		144 hours
				11
Credit points	3			
Requirements prerequisites	1. 1	G2101 Geomathematics I.		
	2. 1	G2203 Geomathematics II.		
	3. 1	G2205 Wave Theory in Ge	ophysics.	
Recommended prerequisites	-			
Learning Goals				
			r	
Knowledge		Skill	Competence	
10. Understanding the basic c	oncepts	13. Able to do analysis	15. Possess the	e ability to
of geophysical signal analy	/sis,	and synthesis of	explain basic concepts	
signal classification and no	oise,	digital filter for	of geophysical signal	
linear system theory for		geophysics signal.	analysis and its	
continuous functions, sampled		14. Able to design	application	
data.		digital filter and	16. Possess the	ability on
11. Understanding the Fourier	ſ	how to apply to a	analyzing so	eismic
I ransform, transfer function	on and	signal, such as	signal in or	der to
impulse response of linear	-	inverse and wave	extract the	
systems, Spectral analysis,		shaping filter.	information	٦.
Convolution and correlation	on and		17. Possess the	ability on
digital filtering.			designing a	n algorithm
12. Understanding the application			and compu	ter program
for coordinate data analy				
	SIS driu		appiy it to g	geophysical
processing.			Signal.	
Content	Signal: a	nalog signal, digital signal.	analog to digita	al conversion:
	Fourier	transform: Fourier serie	s, Fourier inte	gral, Fourier
	transform	n properties, Cosines Fouri	er transform; Di	screte Fourier
	transform: Fourier coefficient, Fourier integral, FFT: Convolution:			Convolution:
	convolution in time and frequency domain, convolution			convolution
	propertie	es, mean of convolutio	n, programing;	Correlation:
	definition, cross correlation, auto correlation, correlation			
	theorem	; Sampling theory: sample	function, samp	ling theorem,
	aliasing; phase properties in digital signal, filter			

Study and examination				
requirements and forms of	Midterm test	\checkmark	45%	
examination	Final Test	\checkmark	35%	
	Attendance, quizzes,	\checkmark	20%	
	Laboratory work	_	_	
		-	-	
Media employed	Slides, beamer, whiteboards, appropriate software, online communication, internet, exercises, etc.			
Reading list	 Oram Brigham B.: Th Applications. Prentic Clearbout, J.F.; Fund With Applications to Book Co., New York, Sheriff, R.E., and Gel Data Processing and Press, 1983. 	e Fast Fourier Tra e-Hall Inc., 1988. amentals of Geop Petroleum Prosp 1976. dart, L.P.; Explora Interpretation. C	ansform and It's physical Data Processing ecting. Mc. Graw-Hill ition Seismology Vol.2 : ambridge University	

30. Geostatistics II

Module designation	Geostatistics II	
Module level	Bachelor	
Code, if applicable	TG3102	
Sub-heading, if applicable:	-	
Courses included in the	Geostatistics II	
module, if applicable:		
Semester(s) in which	Fifth Semester / Third Year	
module is taught		
Module coordinator(s)	Dr. Darharta Dahrin	
Lecturer(s)	Dr. Darharta Dahrin, MS, Indra Gunawan, S.Kom., M.Si., Dr.	Warsa
	S.Si.,MT, Dr. Susanti Alawiyah, ST,MT, Ignatius Sonny Wina	rdhie,
	Ph.D., Ekkal Dinanto, S.T., M.T.	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups Lecturer checks how they solve the problem in	v
	turns	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material	
	Supervision and concultation	
	This activity is continuation of class project. Students	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	
	now to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload							
	C	lass lectures				2 hours	
	Т	utorial session					
	Supervision and consultation			1 hour			
	Р	Practical or experimental laboratory work					
	h	Individual studies			3 hours		
	Т	otal workload per week				6 Hours	
	Ρ	resentation					
	C	lass project					
	F	ield trip					
	Т	otal workload per semester	r			96 hours	;
Credit points	2						
Requirements prerequisites	TG	2201 Geostatistics I (Prered	quisit	:e)			
Learning Goals							
Knowledge		CI:II			Compoton		_
Students are able to		Student are able to		Pos		ovtonsivo	_
understand geophysic	al	analyze and process t	he	 ros kno 	wledge to	describe	
data and how analyze		data by geostatistics		the application of			
the data using		methods.	geostatistics.		optimize i	t	
geostatistics and able	to and interpret		l interpreta	ation	-		
know the results.	geophysical		physical d	ata.			
				0	<u> </u>]
Content	Int	roduction, Uni variable dat	a ana	alysis, Spa	tial correla	ation,	
	ES	timation and modeling, Krig	ging E	stimation	n, Linear Ki	riging, Nor) Satal
		rear Kriging, Application, CC	od cir	onal Simi	Simulation rec	nnique, G	ria
	Ba	sed on Facies Geology Arti	ficial	Neural N	etwork Ar	nlication	JE
Study and examination	20		inerai			pheatern	
requirements and forms of	Ν	/idterm test		\checkmark	35	%	
examination	F	inal Test		\checkmark	45	%	
	P	resentation, quizzes,			20	%	
	h	omework		v	20	/0	
	L	aboratory work		-	-		
Media employed	Sli	des, beamer, whiteboards,	appr	opriate so	oftware, oi	nline	
	со	mmunication, internet, exe	ercise	s, etc.			
Reading list	1.	Davis, J. C, Statistics and I	Data	Analysis i	n Geology,	2, John	
	2	Wiley and Sons, 2nd ed, 1	1986		tistics for	Decementation	
	2.	Characterization SPE Inc	appile	eu Geosta hardson		Reservoir	
	3	Dubrul. O. Geostatistics for	or se	ismic Dat	a Integratio	on in Eartl	า
		Models, , SEG, 2003					

31. Seismic Refraction

Module designation	Seismic Refraction	
Module level	Bachelor	
Code, if applicable	TG3109	
Sub-heading, if applicable:	-	
Courses included in the	Seismic Refraction	
module, if applicable:		
Semester(s) in which module is taught	Fifth Semester / Third Year	
Module coordinator(s)	Dr. Agus Laesanpura	
Lecturer(s)	Dr. Agus Laesanpura, Dr. R. M. RachmatSule	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	guizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	ICD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector followed by discussion	_
	sing side in LCD projector, followed by discussion	-
	they present before	
	Lecturer gives students some problem beforehand. In	,
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem	
	in turns.	
	Class project	
	Lecturer gives students a project which related to	
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly	
	laboratory assistant tell main idea of practical or	v
	experimental. They do the practical afterwards	
	Field trip	
	visit field area or company which is related to course	-

Workload				
	Cla	ss lectures		3 hours
	Tut	torial session		-
	Sup	pervision and consultation		-
	Pra	actical or experimental laborate	ory work	3 hours
	Ind	lividual studies		3 hours
	Tot	tal workload per week		9 hours
	Pre	esentation		-
	Cla	ss project		3 hours
	Fie	ld Trip		-
	Tot	tal workload per semester		144 hours
Cradit paints	2			
Requirements prerequisites	5 TG2	205 Wave Theory in Geophysic	<u>، د</u>	
Recommended prerequisites	First	vear Physic and mathematic		
Learning Goals	1.1.50			
Knowledge		Skill	Compete	ence
Understanding wave elast	ic,	Able to do depth	Possess the a	ability on
acoustic, homogeny and		calculation through	acquiring refraction dat	
heterogenic; modulus.		refraction wave.	using suitable	e
Understanding wave equa	tion	• Able to picking phase,	exploration i	nstrument.
and Ray: Eikonal, Snell,		and interpreting	• Possess the a	ability on
Huygen, and Fermat.		directly or through	calculation a	nd
Understanding the depth a	and	calculation.	interpreting	refraction
interface calculation		• Able to process data	data in subsu	urface.
background: simple, inclined,		for cross-hole and basic		
undulating, finer result by		tomography.		
cross hole, transmission, a	and	Able to use seismic		
basic tomography.		viewer(SEGY) for		
 Understanding object stud 	vb	picking preparation		
refraction: Field of study,				
technique; Application.				
Understanding wave equa	tion			
and simulation on linux ba	ased			
Content	Intro seisr equa solvi met met	oduction: terminologies of el mic wave theory through elast ation, source mechanism, eik ing eikonal equation, basic hod (Hagiwara and Masuda r hod, wide-angle seismic m action seismic, seismic transm	asticity, elasticity ic medium, solving onal and transpo theory of refra- nethods), transmi ethod, some ap nission and wide-	parameters, g elastic wave ort equations, ction seismic ission seismic plications of angle seismic
	met	nous for geothechnics, mining,	, geodynamics, etc	;

Study and examination				
requirements and forms of	Midterm test	\checkmark	30%]
examination	Final Test		35%	
	Attendance, quizzes,		1.00/	
	homework	v	10%	
	Laboratory work	\checkmark	25%	
				_
Media employed	Slides, beamer, whiteboa	ards, appropriate	software, online	
	communication, internet	, exercises, etc.		
Reading list	 Telford et al.; App Press, 1976. Taib, M.I.T.; Interp Teknik, Laboratoriur Rekayasa-ITB, 1987. Musgrave, A.; Seis Exploration Geophys Cerveny, Ray Theory N. Matsuda; Seismic Oyo Technical Notes Kenneth, H.W.; Refr 1988. Sule, M. R., Seismi Waveform Modeling 	plied Geophysics, retasi Seismic R m Geoteknik, Pusa mic refraction p sics, Tulsa, 1986. 7, Cambridge Univ refraction analys 5,1981. raction Seismolog	, Cambridge Unive Refraksi dan Seism at Antar Universitas prospecting, Societ v, Press., 2004. sis for engineering si gi. John Wiley and S comography and El	ersity ologi Ilmu cy of tudy, Sons, lastic

32. Earth Crust Mechanics

Module designation	Earth Crust Mechanics	
Module level	Bachelor	
Code, if applicable	TG3132	
Sub-heading, if applicable:		
Courses included in the	Earth Crust Mechanics	
module, if applicable:		
Semester(s) in which	Seventh Semester / Fourth Year	
module is taught		
Module coordinator(s)	Dr. Wahyu Triyoso	
Lecturer(s)	Dr. T.A. Sanny, Dr. Wahyu Triyoso, Dr. David P. Sahara	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	clide in LCD projector followed by discussion cossion	
	side in LCD projector, followed by discussion session.	N
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	
	current issues and course material	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss together	
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material	

Workload				
	Class I	ectures		2 hours
	Tutorial session			-
	Supervision and consultation			-
	Practi	Practical or experimental laboratory work		
	Indivi	dual studies		4 hours
	Total	workload per week		6 hours
	Prese	ntation		-
	Class	project		-
	Field t	trip		-
	Total	workload per semester		96 hours
Credit points	2			
Requirements prerequisites	1.	TG4142 Engineering & Env	vironmental Geophy	sics.
	2.	Geo-Technical.		
	3.	Earth Mechanisms.		
Recommended	-			
prerequisites				
Learning Goals				
Knowledge		Skill	Competence	e
Understanding main prin of conth cruck machanics	ncipies	Able to calculate	Possess an extensive	
fluid	sand	force, stress and	knowledge of earth	
		deformation	fluids basic prir	
		deformation	and the integra	ation
			with other geo	science
			with other geo	Science
Content	The to	pics of the lecture are con	ncerned with integra	ated exercise
	intimat	ely between explanation	n of basic princip	ples and its
	applica	tion on physical properties	and mechanics of ro	cks. The main
	princip	les of earth crust mechan	ics and fluid such a	is classical of
	earth	crust mechanic, geolog	classification,	engineering
	classific	cation, force and stress	s, tensors, strain	tensor and
	deformation, rock rheology, viscosity and flows laws, components			
	of velo	ocity gradient, partial m	ovement and stread	an Tunction,
	progressive deformation are introduced. A number of application			
	will be introduced on geodynamic framework, tectonic, geological			
	foundation engineering soil & rock mechanic technology			
	nondestructive testing and determination of elastic parameter for			arameter for
	geotec	hnics, mining, and oil explo	ration and exploitati	on.
	geotec	hnics, mining, and oil explo	ration and exploitati	on.

Study and examination				
requirements and forms of	Midterm test	\checkmark	45%	
examination	Final Test	\checkmark	35%	
	Quizzes, homework	\checkmark	20%	
	Laboratory work	-	-	
Media employed	Slides and LCD projectors, wh	niteboards		
Reading list	1. Middleton, G, V., R Wilcock P.R., Mechanics in the Earth and			
	Environmental Sciences. Cambridge Univ. Press, 1996.			
	2. Jaeger, J.C., and N.G.W. Cook, Fundamental of Rock			
	Mechanics. London, Methuen, 1979.			
	3. Weijermars, R., Principles of Rock Mechanics. Alboran Science			
	Publishing, 1997.			
	4. ASTM-STP 634, Dynamic Geotechnical Testing. Race-Street,			
	Philadelphia, USA, 197	7.		
	5. Terrawatanachai, R., N	Non Destructiv	e Testing. Tokyo-Japan,	
	1998.			

Module designation	Geophysical Thermodynamics and Fluid Dynamic	
Module level	Bachelor	
Code, if applicable	TG3201	
Sub-heading, if applicable:	-	
Courses included in the	Geophysical Thermodynamics and Fluid Dynamic	
module, if applicable:		
Semester(s) in which	Fifth Semester / Third Year	
module is taught		
Module coordinator(s)	Dr.Ir. Agus Laesanpura	
Lecturer(s)	Dr.Ir. Agus Laesanpura, MS, Dadi Abdurrahman, ST, MT, Dr.	
	Setianingsih, ST,MT, Dr. Eko Januari Wahyudi, ST,MT	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	\checkmark
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	_
	assistant tell main idea of practical or experimental	
	They do the practical afterwards	
	Field trin	
	Visit field area or company which is related to course	
	material	-

33. Geophysical Thermodynamics and Fluid Dynamic

Workload		
	Class lectures	2 hours
	Tutorial session	1 hour
	Supervision and consultation	-
	Practical or experimental laboratory work	-
	Individual studies	4 hours
	Total workload per week	7 hours
	Presentation	-
	Class project	4 hours
	Field trip	-
	Total workload per semester	84 hours
Credit points	2	
Requirements prerequisites	TG2101 Geomathematics I.	

Learning Goals

anipulating • Possesses
namic manipulating
es and potential thermodynamic
or coordinates and
namic cases in potential function for
es. thermodynamic cases
n reconstructing in geosciences.
gram for • Familiar in
hs based on reconstructing phase
hermodynamic diagram for
s. polymorphs based on
n reconstructing standard
othermal profiles thermodynamic
thermal properties.
n equations. • Familiar in
n using reconstructing simple
al fluid geothermal profiles
rs in simple based on thermal
es cases. conduction equations.
Familiar in using
mechanical fluid
parameters in simple
geosciences cases.

Content	Proficient in manipulating potential function for thermo- in reconstructing phase diag thermodynamic properties. geothermal profiles based Familiar in using mechanical cases. Proficient in manipula potential function for thermo- in reconstructing phase diag thermodynamic properties. geothermal profiles based Familiar in using mechanical cases	g thermodyna odynamic cases ram for polymo . Familiar in on thermal fluid paramete ating thermody odynamic cases ram for polymo . Familiar in on thermal fluid paramete	amic coordinates in geosciences. Fam orphs based on stand reconstructing sin conduction equation ers in simple geoscien ynamic coordinates in geosciences. Fam orphs based on stand reconstructing sin conduction equation ers in simple geoscien	and illiar dard nple ons. nces and illiar dard nple ons. nces
Study and examination				
requirements and forms of	Midterm test	\checkmark	40%	
examination	Final Test	\checkmark	40%	
	Presentation, quizzes,	al	20%	
	homework	v	2070	
	Laboratory work	-	-	
Media employed	Slides, beamer, boards, appr communication, internet, exercised and the second	opriate softwa ercises etc.	re, online	
Reading list	1. Anderson, G.M., Thern	nodynamics of	Natural Systems, J	ohn
	2 Bar-Meir G Basic of Fl	uid Mechanics	Potto Project (e-bo	ok)
	2011.		, 10110110jeet (e bo	0,0,0
	3. Fowler, C. M. R., The S	Solid Earth: An	Introduction to Glo	obal
	Geophysics, 2nd edition	Cambridge Un	iversity, 2004.	
	4. Kern, R., and Weisbor Freeman Cooper & Co, 2	d, A. Thermoo 1967.	dynamics for Geolog	gist.
	 Munson, Young, Okiishi, Fundamentals of Fluid Mechanics, John wiley 2006 			
	 Zemansky and Dittman. Heat and Thermodynamics. Mc. Graw Hill, 1982. 			

34. Seismic Data Acquisition

Module designation	Seismic Data Acquisition	
Module level	Bachelor	
Code, if applicable	TG3261	
Sub-heading, if applicable:	-	
Courses included in the	Seismic Reflection Data Acquisition & Processing	
module, if applicable:		
Semester(s) in which	Sixth Semester / Third Year	
module is taught		
Module coordinator(s)	Dr. Alfian	
Lecturer(s)	Dr.Eng.Ir. T.A. Sanny, MT, Dr. Alfian, MT, Prof.Dr.rer.nat. Av	vali
	Priyono, Fernando Lawrens Hutapea, ST,M, Dr.rer.nat. And	ri
	Hendriyana, ST,MT	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	1
	class students explain how to solve the problem in	\checkmark
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	current iscues and course material	-
	Current issues and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	
	assistant tell main idea of practical or experimental.	•
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload		
	Class lectures	3 hours
	Tutorial session	3 hours
	Supervision and consultation	-
	Practical or experimental laboratory work	-
	Individual studies	3 hours
	Total workload per week	9 hours
	Presentation	-
	Class project	-
	Field trip	-
	Total workload per semester	144 hours
Credit points	3	
Requirements prerequisites	TG2205 Waves Theory in Geophysics.	

Learning Goals

Knowledge	Skill	Competence
Basic exploration	Good understanding	Able to explain basic
seismology, seismic	and QC of the	concept of exploration
history and technolog	y equipment and technic	seismology.
and terminology.	of land and marine	Be able to use Basic
Basic theory seismic	seismic acquisition,	knowledge of basic
wave travel time,	survey parameter	concept of exploration
reflected, refracted	design.	seismology to design
waves, ray geometry,	Good understanding of	and QC of marine and
Seismic resolution.	2D seismic data	land seismic survey.
Knowledge of seismic	processing technic, and	Be able to process
data acquisition,	able to process seismic	seismic data from filed
consideration,	data from raw data to	record to stack section.
objectives and	final stack section.	• Be able to find the best
limitation, parameter	Good understanding of	processing flow and
equipment and techn	ic. migration technic in	parameter for a specific
Land and marine surv	ey seismic data	seismic data.
design.	processing, seismic	• Be able to QC seismic
Knowledge of seismic	velocity.	processing operation of
data processing,	• Familiar with industrial	marine and land
seismic velocity,	seismic processing	seismic data using
seismic migration.	system software.	seismic processing
		system software.
		· · · · · · · · · · · · · · · · · · ·
Content	The topics subject are focused int	o the following subtopics : review
	of fundamental concept of reflect	tion seismic and its application of
	subsurface image reconstruction	for oil & gas exploration, time-
	distance relationship, seismic data acquisition, quality contro	
	Land and Marine seismic survey,	Seismic data Processing, seismic

migration, seismic velocity and Seismic attribute and DHI

Study and examination				
requirements and forms of	Midterm test	\checkmark	45%	
examination	Final Test	\checkmark	35%	
	Presentation, quizzes,		20%	
	homework	N	20%	
	Laboratory work	-	-	
			·	
Media employed	Slides, beamer, whiteboards, appropriate software, online			
	communication, internet, ex	ercises, etc.		
	Plus there is also laboratory	work. Laborato	ry sessions are orgar	iized
	in parallel to theoretical stud	y given in class	rooms. Students perf	orm
	different experiments each v	veek and subm	nit reports for evalua	tion.
Reading list	1. Yilmaz, O., Seismic Dat	a Processing, S	ociety of Exploration	۱
	Geophysics, 1987.			
	2. Sheriff, R.E. & Geldart,	L.P. Exploratio	n Seismology. 1998.	

35. Geo-electromagnetism

Module designation	Geo-electromagnetism	
Module level	Bachelor	
Code, if applicable	TG3241	
Sub-heading, if applicable:	-	
Courses included in the		
module, if applicable:		
Semester(s) in which module	Sixth Semester / Third Year	
is taught		
Module coordinator(s)		
Lecturer(s)	18. Dr.rer.nat.lr. Wahyudi Widyatmoko Parnadi, MS	
	19. Dr.rer.nat. Widodo ST,MT	
	20. Dr. Warsa S.Si.,MT	
	21. Prof.Dr. Hendra Grandis	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss	
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	visit field area or company which is related to course	-
	material.	

Workload		
	Class lectures	2 hours
	Tutorial session	
	Supervision and consultation	
	Practical or experimental labora	tory work 1 hour
	Individual studies	4 hours
	Total workload per week	6 hours
	Presentation	8 hours
	Class project	48 hours
	Field Trip	
	Total workload per semester	70 hours
	· · ·	I
Credit points	3	
Requirements prerequisites	1. TG2101 Geomathematics I (P	rerequisite)
	2. TG2103 Basic Geophysic (Pre	requisite)
	3. TG2203 Geomathematics II (F	Prerequisite)
Learning Goals		
		C
knowledge	SKIII	Competence
Understand basic	Able to apply	lake possession of
background of	geoelectric and	capability in order to
geoelectric and	electromagnetic	solve the problem in
electromagnetic	methods in order to	the case of geophysical
Methods.	solve the problem of	exploration.
Understand current	exploration,	• Familiar in the
distribution in the	environmental and	modeling of geoelectric
scheme nomogenous	hazard mitigation.	and electromagnetic
and innomogeneities	Understand to	data in the scheme of
concepts.	modeling the	norward and inversion
Understand the	geoelectric and	model.
concept of forward and	electromagnetic models	Familiar in design
Inversion modeling.	In the scheme of	survey of geoelectric
Understand of apparent	forward and inversion	and electromagnetic
and true resistivities	models.	methods.
concept.	raminar in design	Familiar to analysis the
Understand skin depth	survey of geoelectric	exploration problem
concept either in the	and electromagnetic	using geoelectric and
geoelectric and		electromagnetic
electromagnetic	Able to analysis the avalaration problem	methods
methods	exploration problem	
Understand design	using geoelectric and	
surveys of geoelectric	electromagnetic	
and electromagnetic	metnoas	
methods.		

Content	Electrical (resistivity, self potential, induced polaritation) and physical properties of earth's materials, role of electrical and electromagnetic methods in geophysics, DC electrical method, electrode configuration, vertical electrical sounding (VES) and profiling techniques, layered earth model (1-D), Induced Polarization (IP), chargeability and metal factor, Self-Potential (SP), Maxwell'ss equations, EM field equations, passive methods: very low frequency (VLF), magnetotellruics (MT), Audio MT and controlled-source audio-frequency magnetotellurics (CSAMT) methods, Active Methods: Transient EM (TEM), Long Offshet TEM, Ground Penetrating Radar (GPR) and an overview application of EM Methods.		
Study and examination			
requirements and forms of	Midterm test		35%
examination	Final Test	\checkmark	35%
	Attendance, quizzes,	2	15%
	homework	v	1370
	Laboratory work	\checkmark	15%
Media employed	Slides, beamer, boards, communication, internet, exe	appropriate ercises, laborato	software, online ry activities
Reading list	 Communication, Internet, exercises, laboratory activities Reynolds, J.M., An Introduction to Applied and Environmental Geophysics, 2nd Edition, ISBN: 978-0-471-48535-3,2011. Telford, W.M., Gelgard, L.P., Sheriff, R.E., Applied Geophysics, Cambridge University Press, 1990. Beblo, M. (ed.),, Umweltgeophysik, , Ernst & Sohn, 465 pp, 1998 SEGJ, Application of Geophysical Methods to Engineering and Environmental Problem, , Cambridge Univ. Press, 2004 Nabighian M.N., (ed.),, Electromagnetic Methods in Applied Geophysics, Vol.1. Theory, Vol.2 Application,, , Society of Exploration Geophysicists, 1989 		

36. Gravity and Geomagnetics

Module designation	Gravity and Geomagnetics	
Module level	Bachelor	
Code, if applicable	TG3263	
Sub-heading, if applicable:	-	
Courses included in the	Gravity and Magnetics	
module, if applicable:		
Semester(s) in which	Sixth Semester / Third Year	
module is taught		
Module coordinator(s)	Dr. Susanti Alawiyah	
Lecturer(s)	Dr. Susanti Alawiyah, ST,MT, Dr. Dadi Abdurrahman, ST,MT	, Dr. Eko
	Januari Wahyudi, ST,MT	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	•
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	2
	current issues and course material	v
	Supervision and consultation	
	This activity is continuation of class project. Students	
	This activity is continuation of class project. Students	\checkmark
	bey to solve the problem which they face and discuss together	
	now to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	,
	according to practical module. Firstly, laboratory	N
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	\checkmark
	material.	

Workload		
	Class lectures	2 hours
	Tutorial session	1 hours
	Supervision and consultation	on I hours
	Practical or experimental la	boratory work
	Individual studies	3 hours
	Total workload per week	6 hours
	Presentation	-
	Class project	-
	Field trip	3
	Total workload per semeste	er 99 hours
	2	
Credit points	3 1 TC2101 Coomathem	
nequirements prerequisites	2. TG2203 Geomather	national II.
	3. TG2204 Potential Th	eory.
Learning Goals		,
Knowledge	Skill	Competence
Gravity and	Be able to use	Be able to calculate
geomagnetic anomal	y. mathematical tools	CBA, Regional,
Subsurface density as	nd and certain softwar	re Residual, and filtering,
susceptibility.	for gravity and	Magnetic anomaly.
Gravity and	geomagnetic	Be able to working
geomagnetic data	processing.	with gravity and
acquisition.		geomagnetic data in
 Gravity and 		field-camp from data
geomagnetic data		acquisition, modeling,
processing.		and interpretation.
Gravity and		
geomagnetic modelir	ıg.	
Gravity and		
geomagnetic		
interpretation.		
Content	The meaning of gravity and r	nagnetic in identification of subsurface
	density and susceptibility of	change for geodynamics, exploration,
	geotechnics and environm	ental and its application examples,
	density and susceptibility of	f rock, basic theory of gravity, gravity
	anomaly, gravity data reduct	ion, gravimeter, field operation, density
	estimation from gravity da	ata, main and outer magnetic field,
	magnetic anomaly, reduction	on or magnetic data, magnetometer,
	auantitative interpretation	separation, qualitative interpretation,
	quantitative interpretation u	sing for ward modeling and inversion

Study and examination				
requirements and forms of	Midterm test	\checkmark	30%	
examination	Final Test	\checkmark	25%	
	Presentation, quizzes,	.1	450/	
	homework	N	45%	
	Laboratory work	-	-	
		·		·
Media employed	Slides, boards, appropriate s	oftware, exerci	se, gravimeter	
Reading list	1. Blackly, Richard. J, Poter	ntiaol Theory in	Gravity and Magnet	tic
	Application, Cambridge	Univ. Ptress, 19	95	
	2. Grant & West, Interpret	ation Theory in	Applied Geophysics	.
	Mc. Graw-Hill, 1969.			
	3. Hinze, W.J., Von Frese, R	R.R.B, and Saad,	A.H., Gravity and	
	Magnetic Exploration, 20	013.		
	4. Reynold, J.M., An Introd	uction to Applie	ed and Environment	:al
	Geophysics, John Wiley	and Sons Ltd., 1	.997.	
	5. W.M Telford, L.P Geldar	t, R.E Sheriff, ar	nd D.A Keys, Applied	ł
	Geophysics, Cambridge	University Press	5, 1988.	

37. Geodynamics

Module designation	Geodynamics	
Module level	Bachelor	
Code, if applicable	TG3222	
Sub-heading, if applicable:	-	
Courses included in the	Geodynamics	
module, if applicable:		
Semester(s) in which	Sixth Semester / Third Year	
module is taught		
Module coordinator(s)	Class 1:	
	Prof.Dr. Andri Dian Nugraha S.Si. M.Si.	
	Class 2:	
	Dr.rer.nat. David Prambudi Sahara, S.T. M.T.	
Lecturer(s)	Class 1:	
	Prof.Dr. Andri Dian Nugraha S.Si., M.Si., Dr. Zulfakriza, S.Si., MT	
	Class 2:	
	Dr. rer. nat. David Prambudi Sahara, S.T. M.T., Dr. Endra Gunaw	an.
	S T. M Sc.	,
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
nours	Lacturer teaches students in class. There will be non	
	quizzos task or homowork in some classes Losturor	2
	quizzes, task, of nonnework in some classes. Lecturer	N
	presents course material using media such as since in LCD	
	projector and whiteboard.	
	Presentation	
	students present course materials in front of class using	
	slide in LCD projector, followed by discussion session. After	
	presentation, they make report what they present before.	
	lutorial session	
	Lecturer gives students some problem beforenand. In class	
	students explain how to solve the problem in groups.	
	Lecturer checks how they solve the problem in turns.	
	Class project and discussion	,
	Lecturer gives students a project which related to current	N
	issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together how	,
	to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory assistant	-
	tell main idea of practical or experimental. They do the	
	practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload		
	Class lectures 2 hours	
	Tutorial session	
	Supervision and consultation -	
	Practical or experimental laboratory work -	
	Individual studies	4 hours
	Total workload per week	6 hours
	Presentation	2 hours
	Class project	-
	Field trip	-
	Total workload per semester	96 hours
Credit points	2	
Requirements prerequisites	-	
Learning Goals		
Knowledge	Skill Compete	ence
Students understand	Able to describe the Possesses ar	n extensive
basic for further study	basic for further study knowledge t	o describe
related to Earth's plat	es related to Earth's plates the basic for	further
dynamics	dynamics dynamics. study related to Ear	
Students understand: Able to describe plate's dynamics.		mics.
plate tectonics, mantle describe principles of • Familiar with t		n tectonic
convection, plate	plate tectonics, mantle processes, s	ubduction
boundary, Wilson cycl	e, convection, Wilson zone worldv	vide, Benioff
hot spot, triple junctio	on, cycle, hot spot, triple zone, and fa	ult plane
Earth's interior,	junction, kinematics, solution det	ermination
kinematics, morpholo	orphology morphology and	
and deformation;	deformation;	
Mechanics: Force and	Mechanics: Force and	
rheology; and dynami	rheology: and dynamics rheology: and dynamics	
process.	process.	
Content	Basic understanding of the plate motion that includes	its mechanism
	i.e. manue convection as the driving force for su	
	processes, neat now, and voicanism (not spot).	Processes of
	subduction, inple junction, graben, transfor	
Study and examination		
requirements and forms of	Midterm test $\sqrt{4}$	0%
examination	Final Test $\sqrt{4}$	0%
	Presentation, quizzes, $\sqrt{2}$	0%
	homework	
Media employed	Slides beamer whiteboards appropriate software	online
	communication, internet exercises etc	2C

Reading list	• Gubbins, D.: "Seismology and Plate Tectonics", Cambridge
	University Press, Cambridge, 1990.
	• Richards, M.A., Gordon, R.G. and Van der Hilst, R.D.: "The
	History and Dynamics of Global Plate Motions", American
	Geophysical Union, Washington, 2000.
	• Fowler, C.M.R., et al.: "The Solid Earth: An Introduction to
	Global Geophysics", Cambridge University Press, Cambridge,
	2005.
	• Turcotte, D.L. and Schubert, G.: "Geodynamics", Cambridge
	University Press, Cambridge, 2014

38. Fieldwork

Module designation	Fieldwork		
Module level	Bachelor		
Code, if applicable	TG3290		
Sub-heading, if applicable:	-		
Courses included in the module, if applicable:	Fieldwork		
Semester(s) in which module is taught	Sixth Semester / Third Year		
Module coordinator(s)	Prof. Dr. Satria Bijaksana		
Lecturer(s)	Prof. Dr. Satria Bijaksana, Prof. Dr. Ir. Djoko Santoso, M.Sc., Faridz Nizar Ahmady, S.T., M.T., Ekkal Dinanto, S.T., M.T., Dadi Abdurrahman, ST, MT, Dr. Eng. Ir. T.A. Sanny, MT, Fernando Lawrens Hutapea, ST, MT		
Language	Bahasa Indonesia		
Relation to curriculum	Major Subject / Compulsory Course		
Type of teaching, contact			
hours	Class lectures Lecturer teaches students in class. There will be pop quizzes, task, or homework in some classes. Lecturer presents course material using media such as slide in LCD projector and whiteboard.	\checkmark	
	Presentation Students present course materials in front of class using slide in LCD projector, followed by discussion session. After presentation, they make report what they present before.		
	Tutorial session Lecturer gives students some problem beforehand. In class students explain how to solve the problem in groups. Lecturer checks how they solve the problem in turns.		
	Class project and discussion Lecturer gives students a project which related to current issues and course material.	\checkmark	
	Supervision and consultation This activity is continuation of class project. Students consults problem which they face and discuss together how to solve the problem.	\checkmark	
	Practical or experimental laboratory work Students do practical or experimental in the laboratory according to practical module. Firstly, laboratory assistant tell main idea of practical or experimental. They do the practical afterwards.		
	Field trip Visit field area or company which is related to course material.		

Workload					
	Class lectures		1 hours		
	Tutorial session		_		
	Supervision and consultation		1 hour		
	Practical or experimental laboratory work				
	Individual studies		4 hours		
	Total workload per week		6 hours		
	Presentation		_		
	Class project		-		
	Field trip		80 hours		
	Total workload per semester		164 hours		
Credit points	3				
Requirement's prerequisites	All basic course on geology and geophysi	cs			
Learning Goals					
Knowledge	Skill	Competence	e		
 Onderstand the importance of geological information and geological observation in geophysical works. Understand the principles and methodologies in general geophysical methods (gravity, magnetic, refraction seismology, geoelectricty, GPR (ground penetrating RADAR), EM methods) Understand the importance of combined methods in geophysical exploration Understand the basic elements in designing geophysical surveys. 	 Having field experience in geological and geophysical survey. Able to conduct basic geological survey that include field observation, data processing and producing basic geological map Able to design simple geophysical survey by considering the availability of manpower, instruments, logistics, transports etc. Able to operate basic geophysical instruments in the field including simple trouble shooting Able to handle and process data generated by geological and geophysical surveys. Able to make simple interpretation on the results of geophysical surveys Able to communicate his/her own finding through oral presentation as well as through written report Able to work in a team in the stressful field environment. 	 Confide leading geophy survey Confide becomi large ge survey i specific Willing learn m field ge 	a simple sical ence in ng part of eophysical in charge a task. hess to hore about ophysics.		
Content	In this course, the knowledge on how to make a geological and geophysical surveys will be given. The course includes exploration concept, planning, geological observation, geological mapping, data acquisition, processing, and interpretation. Several geophysical methods will be applied on the field, namely: refraction seismic, gravity, magnetic, geoelectrical, and Ground Penetrating RADAR.				
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Study and examination					
requirements and forms of	Onsite performance	\checkmark	30%		
examination	Preliminary Report	\checkmark	20%		
	Presentation	-	-		
	Final Report	\checkmark	50%		
Media employed	Geophysical instruments (magnetometer, resistivity-meter, gravimeter, refraction seismometer, GPR), computer (PC and laptop), geological compass, GPS, topography map, whiteboard, projector, and safety equipment				
Reading list	 Santoso, D. et al. Panduan Teknis Survei Lapangan Geologi & Geofisika (Untuk Mahasiswa), ITB Press, 2021. Telford, W.M., Geldart, L.P., Sheriff, R.E., Applied Geophysics, 2nd Edition, Cambridge Univ. Press, 1990. Reynolds, J.M., An Introduction to Applied and Environmental Geophysics. John Wiley and Sons, 1997. 				

39.	Advanced	Geophysical	Instrumentation
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Module designation	Advanced Geophysical Instrumentation	
Module level	Bachelor	
Code, if applicable	TG3001	
Sub-heading, if	-	
applicable:		
Courses included in the	Advanced Geophysical Instrumentation	
module, if applicable:		
Semester(s) in which	Seventh or Eight Semester / Fourth Year	
module is taught		
Module coordinator(s)	Dr. Warsa S.Si.,MT	
Lecturer(s)	Dr. Warsa S.Si.,MT	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		T1
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	-
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	concults problem which they face and discuss together	-
	how to solve the problem	
	Practical or experimental laboratory work	
	Students do prostigal or oversite antal in the laboratory	
	students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	N
	assistant tell main idea of practical or experimental.	
	They do the practical atterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload							
	Class lectures 2 hour						
	Tuto	orial session					
	Supe	ervision and consultation					
	Prac	tical or experimental laboratory	/ work	1 hour			
	Indiv	vidual studies		6 hours			
	Tota	il workload per week		9 hours			
	Pres	Presentation					
	Clas	s project					
	Field	Field trip					
	Total workload per semester144 ho						
Credit points	3						
Requirements	5						
prerequisites							
Learning Goals							
Knowledge		Skill	Compe	etence			
 Understanding diverse principle of transducer device in geophysics. Understanding the 		electronics instrumentation system measurement.	geophysica providing p characteris	al information principle and stic of			
concept of measuring system in geophysics. • Understanding the concept of data acquisition system.	hysics.instrumentation system measurement.providing pr characteristi transducer of acquisition survey design.aAble to make simple acquisition survey design.Possess the a using electro instrumentation and information measuring system integration.information measuring system integration.Possess the a using electro instrumenta application of surface recoPossess the a using electro instrumenta information measuring system integration.Possess the a using electro instrumenta related with method and the geophys instrumenta application of surface recoPossess the a information measuring system integration.Possess the a using electro instrumenta application of surface recoinstrumenta information system.Possess the a 		device. ability on ronic tation which is the measuring of operating ysical tations in the of sub- construction. ability on tation ion and to grated tation and n measuring				
Content	Basic chara electr platfc devel	configuration of instrumentatic octeristics, components of instru ronic instrumentation. Examples form for recently geophysical app opment.	n system, instru mentation, prop of electronic in plication and futu	mentation perties of strumentation ure			

Study and examination			
requirements and forms	Midterm test	\checkmark	30%
of examination	Final Test		30%
	Attendance, quizzes, homework	\checkmark	20%
	Laboratory work		20%
Media employed			
Reading list	 Rangan, Sarma, Mani. Ir Mc. Graw-Hill, 1992. Jacon Fraden. Handbool Applications. AIP press, Charles K. Alexander, M Electric Circuits, Fourth Inc, 2007. 	nstrumentation k of modern se Springer-Verla atthew N. O. S Edition, The M	a: Device and System. Tata nsor: Physics, Design and g, New York, 1996. adiku. Fundamentals of cGraw-Hill Companies,

40. Communication in Geophysics

Module designation	Communication in Geophysics			
Module level	Bachelor			
Code, if applicable	TG4001			
Sub-heading, if applicable:				
Courses included in the	Communication in Goonbysics			
module, if applicable:				
Semester(s) in which	Seventh Semester / Fourth Year			
module is taught				
Module coordinator(s)	Prof. Dr. Satria Bijaksana, Silvia Jannatul Fajar, S.T., M.T., Pr	rof. Dr.		
	Ir. Djoko Santoso, M.Sc., Faridz Nizar Ahmady, S.T., M.T.			
Lecturer(s)	Dr. Agus Laesanpura			
Language	Bahasa Indonesia			
Relation to curriculum	Major Subject / Compulsory Course			
Type of teaching, contact				
hours	Class lectures			
	Lecturer teaches students in class. There will be pop			
	quizzes, task, or homework in some classes. Lecturer	\checkmark		
	presents course material using media such as slide in			
	LCD projector and whiteboard.			
	Presentation			
	Students present course materials in front of class using			
	slide in LCD projector, followed by discussion session.	-		
	After presentation, they make report what they present			
	before.			
	Tutorial session			
	Lecturer gives students some problem beforehand. In			
	class students explain how to solve the problem in	-		
	groups. Lecturer checks how they solve the problem in			
	turns.			
	Class project and discussion			
	Lecturer gives students a project which related to	_		
	current issues and course material	_		
	Supervision and concultation			
	This activity is continuation of class project. Students			
	This activity is continuation of class project. Students	-		
	consults problem which they face and discuss together			
	now to solve the problem.			
	Practical or experimental laboratory work			
	Students do practical or experimental in the laboratory			
	according to practical module. Firstly, laboratory	-		
	assistant tell main idea of practical or experimental.			
	They do the practical afterwards.			
	Field trip			
	Visit field area or company which is related to course	-		
	material.			

Workload				
WORKIOAU	Class lectures		2 hours	
	Tutorial session	2 110013		
	Supervision and consultation	า		
	Practical or experimental lat	oratory work		
	Individual studies	4 hours		
	Total workload per week		6 hours	
	Presentation		-	
	Field trip			
	Total workload per semester	<u> </u>	- 96 bours	
	Total workload per semester		50110013	
Credit points	2			
Requirements prerequisites	 TG3290 Field Camp Geop 	hysics.		
	 KU-102X English. 			
	KU-1011 Scientific Paper	Writing.		
Recommended	-			
prerequisites				
Learning Goals				
Kin av da da a	cl-:II			
Knowledge	SKIII		ompetence	
Understanding the	Able to write abstract	Posse	ss an extensive	
scientific culture for	and resume.	knowl	edge of scientific	
reasoning and its	Able to do	reaso	ning.	
evolving.	presentation, poster,	ss an extensive		
 Understanding oral 	report and article knowledge of			
presentation and	formatting. communication in writing			
writing thoroughly.	and oral presentation.			
Content	Building knowledge supported by publication have an importance in diversification of Technology finding and scientific discovery. On this occasion student experiencing about scientific culture, its activity, introducing to thinking by reasoning, logic, empirical and experiment; The activity of scientific community in form of paper, report, publication with standard formatting. The practical activity is toward synopsis, analytical reasoning and argumentation, procontation technique with scientific culture			
Study and examination				
requirements and forms of	Midterm test	\checkmark	30%	
examination	Final Test		45%	
	Homework		25%	
	Laboratory work	-	-	
Media employed	White board, notebook, LCD p software	projector, pow	ver point and drawing	
Reading list	 Briscoe, M.H., A guide to scientific illustrations. Nicolle, Jean Marie, <i>Histoire des methods Scientifiques</i>, Breal, 1994. O'Connor, <i>Writing Succesfully in Science</i>, Chapman & Hall, 1996. 			

41. Final Project I

Module designation	Final Project I	
Module level	Bachelor	
Code, if applicable	TG4092	
Sub-heading, if applicable:		
Courses included in the	Final Project I	
module, if applicable:		
Semester(s) in which	Seventh Semester / Fourth Year	
module is taught		
Module coordinator(s)	Dr.Eko Januari Wahyudi	
Lecturer(s)	Dr.Eko Januari Wahyudi	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	-
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	•
	slide in LCD projector, followed by discussion session	
	After procentation, they make report what they procent	
	After presentation, they make report what they present	
	Tutorial session	N
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	-
	Lecturer gives students a project which related to	
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	v
	consults problem which they face and discuss together	
	consults problem which they face and discuss together	
	now to solve the problem.	
	Practical or experimental laboratory work	-
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	
	material.	

Workload					
	Class lectures	-			
	Tutorial session			1 hour	
	Supervision and consultation			1 hour	
	Practical or experimental labor	ratory work		-	
	Individual studies			4 hours	
	Total workload per week			-	
	Presentation	2 hours			
	Class project			-	
	Field trip			Optional	
	Total workload per semester			98 hours	
Credit points	2				
Requirements prerequisites	1. All Courses related to the	e final project	topic		
Recommended	-				
prerequisites					
Learning Goals					
Knowledge	Skill	Con	npetence	ce	
Deep understanding of	Able to conduct	 Possess t 	he capa	bility to	
the selected topics and	geophysical data do the geophysical study			al study	
the geophysical method	acquisition and/or of a method case or a			ora	
applied.	processing and/or study area case, write its			write its	
	interpretation to solve the report and present it			nt it	
	selected problem.				
Content	Basic concept discussion regarding topic which is chosen as the final project, progress report of the research, tutorial, Final project's proposal completion.				
Study and examination		1	[
requirements and forms of	Basic concept comprehension	/ √		50%	
examination	Proposal progress	√ 10%		10%	
	Proposal's presentation and examination, knowledge improvement	\checkmark		40%	
Media employed	Slides, beamer, whiteboards, app	propriate soft	ware, or	line	
	communication, internet, exercis	ses, etc., and a	also som	е	
	geophysical instruments depend on the topic of the final project				
	student work on				
Reading list	Literature depends on the topic of the final project				

42. Seismic Interpretation

Module designation	Seismic Interpretation	
Module level	Bachelor	
Code, if applicable	TG4162	
Sub-heading, if applicable:		
Courses included in the	Seismic Interpretation	
module, if applicable:		
Semester(s) in which	Seventh Semester / Fourth Year	
module is taught		
Module coordinator(s)	Prof. Sigit Sukmono	
Lecturer(s)	Prof. Sigit Sukmono, Prof. Awali Priyono	
Language	Bahasa Indonesia	
Relation to curriculum	Major subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	_
	After presentation, they make report what they present	
	hefore	
	Tutorial sossion	
	Lecturer gives students some problem beforeband. In	
	Lecturer gives students some problem beforenand. In	1
	class students explain now to solve the problem in	N
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem	
	Practical or experimental laboratory work	
	Students de prestieel er evperimental in the laboratory	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload					
	Class lectures			3 hours	
	Tutorial ses	sion			3 hours
	Supervision	and consultation			-
	Practical or	experimental labo	oratory work		-
	Individual st	tudies			3 hours
	Total workle	oad per week			9 hours
	Presentatio	n			-
	Class projec	t			-
	Field trip				-
	Total workle	oad per semester			144 hours
Credit points	3				
Requirements prerequisites	TG3261	Seismic Reflectio	n Data Acquisiti	ion & Pro	cessing.
Recommended	-				0
prerequisites					
Learning Goals					
Knowledge			:kill	Cor	mnetence
Understanding relations of	rock-physics	 Able to do re 	elated amplitude	• P(nssess the
parameters with Vp. Vs and	density, and	response for	rward modeling		anability to
then with seismic amplitud	e responses.	with the roc	k physic	d	
 Understanding how to app 	ly knowledge	parameters	given.	u u	
in point 1 to do seismic inte	erpretation	Able to iden	tify the phase,		repretation
for hydrocarbon exploratio	n which	polarity, res	olution, lithology	- TC	or
include forward modeling,	well-seismic	porosity-fluids effects and hydrocarbon			ydrocarbon
tie, stratigraphy & structur	al	related pitfa	Ills for the seismic	ex ex	kploration
interpretation, 3D seismic i	nterpretation	data given.		aı	nd
and analysis of lithology-po	prosity-fluids	Able to do w	vell-seismic tie,	d	evelopment.
effects.		seismic strat	tigraphy and		
Understanding now to do t conversion	ime-depth	structural in	terpretation with	1	
• Understanding interpretati	on nitfalls		given. imo donth		
	on pitians.	Able to do the conversion version	with the velocity		
		function give	en.		
Content	Objective, ro	ole of rock-phys	ics, Wyllie & Bi	ot-Gassm	an equations
	and their app	lications, phase,	polarity, resolu	tion, effeo	ct of lithology-
	porosity-fluid	ds, forward mo	odelling of seis	smic amp	olitude, well-
	seismic tie,	stratigraphy &	structural inter	rpretatior	n, 3D seismic
	interpretatio	n, time-depth m	apping, pitfall a	nalysis	
Study and examination					
requirements and forms of	Midterm tes	t		309	%
examination Final Test				409	%
	Quizzes, assi	gnment		309	%
	Laboratory v	vork	-	-	
Media employed	Slides, bea	amer, boards,	appropriate	softwa	re's, online
	communicat	ion, internet, exe	ercises		
Reading list	1. Sukn	nono, S., 2010	, Diktat Kuliah	Interpr	etasi Seismik
	Refleksi, ITB.				
	2. Brow	vn, A.R., 2009, Ir	nterpretation of	3-Dimens	sional Seismic
	Data				

43. Geophysical Inversion

Module designation	Geophysical Inversion	
Module level	Bachelor	
Code, if applicable	TG4141	
Sub-heading, if applicable:	-	
Courses included in the	Geophysical Inversion	
module, if applicable:		
Semester(s) in which module	Fifth Semester / Third Year	
is taught		
Module coordinator(s)	Prof. Dr. Hendra Grandis	
Lecturer(s)	Prof. Dr. Hendra Grandis, Dr. Tedi Yudistira, S.Si.,M.Si.	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
nours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session After presentation they make report what	
	they present before	
	Tutorial cossion	
	Lecturer gives students some problem beforenand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem	
	in turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem	
	Drestial en eventimental laborator unark	
	Practical of experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tells main idea of practical or	
	experimental. They do the practical afterwards.	
	Field Trip	
	Visit field area or company which is related to course	-
	material.	

Workload			
	Class lectures		2 hours
	Tutorial session		-
	Supervision and consultation		-
	Practical or experimental laborate	ory work	-
	Individual studies	,	4 hours
	Total workload per week		6 hours
	Presentation		-
	Class Project		-
	Field Trip		-
	Total workload per semester	9	96 hours
Credit points	2		
Requirements prerequisites	TG2101 Geomathematics I.		
	TG2203 Geomathematics II.		
	TG2240 Computing in Geophysics.		
	TG2111 Introduction to Geophysics	5.	
Recommended prerequisites	-		
Learning Goals:			
Knowledge	Skill	Competence	e .
 Understand to identify forward and inverse problems in geophysics. Understand to identify linear and non-linear inverse problems. Understand to identify influence of data uncertainty to the solution of inverse problems. Understand to integrate diverse type of prior information and / or constraints into solution to linear inverse problems. 	 Capable to make formulation of linear forward and inverse problems using matrix form. Capable to make formulation of solutions to linear inverse problems. Able to make formulation of solutions to non-linear inverse problems using local / linearized approach. Able to make formulation of solutions to non-linear inverse problems using global approach. 	 Possess ability t linear and non-l inverse problem geophysics usin methods introd discussed in this 	to solve linear ns in g various uced and s course.
Content	Concept of geophysical modeling, and inverse modeling, solving linea principle, formulation of linear invers inversion, weighted linear inverse formulation of non-linear inverse p non-linear inversion, global appr systematic/grid search, random guided random search method, genetic algorithm.	concept of forward r regressionusing lea rse problems, solutio ion, damped linear roblems, linearized a oach of non-linear search, Monte-Carlo simulated annealing	d modeling ast-squares on of linear inversion, pproach of inversion, o method, g method,

Study and examination							
requirements and forms of	Midterm test		35%				
examination	Final Test	Final Test √ 35					
	Assignments	\checkmark	30%				
	Laboratory work	Laboratory work					
	Minimum presence percentag	ge 70%. Usually	Top 10% will have				
	grade A with lower grades dis	tributed among	g the rest.				
Media employed	Conventional lectures using e.g. whiteboard, computer, etc.,						
	computer exercises, video co	urses from inter	rnet, etc.				
Reading list	1. Menke, W., Geophysi	cal Data Analys	is: Discrete Inverse				
	Theory, Academic Pre	ess, 1989.					
	2. Tarantola, A., Inverse	Problem Theor	y: Methods for Data				
	Fitting and Model Par	ameter Estimat	ion, Elsevier, 1987.				
	3. Sen, M.K., Stoffa, P.L.	, Global Optimiz	zation Methods in				
	Geophysical Inversior	n, Elsevier, 1995					
	4. Grandis, H., Penganta	r Inversi Geofis	ika, HAGI, 2009.				

44. Capita of Selecta in Geophysics

Module designation	Capita of Selecta in Geophysics	
Module level	Bachelor	
Code, if applicable	TG4029	
Sub-heading, if applicable:	-	
Courses included in the	Capita of Selecta in Geophysics	
module, if applicable:		
Semester(s) in which	Seventh Semester / Fourth Year	
module is taught		
Module coordinator(s)	Prof. Satria Bijaksana	
Lecturer(s)	Prof. Satria Bijaksana, Dr. Endra Gunawan, ST,M.Sc	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
nours	Class lectures	
	Lecturer teaches students in class. There will be pop	,
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session.	
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	v
	turne	
	Class project and discussion	1
	Lecturer gives students a project which related to	N
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	_
	assistant tells main idea of practical or experimental	
	They do the practical afterwards	
	Field Trip	
	visit field area or company which is related to course	-
	material.	

Workload				
	Cla	iss lectures		2 hours
	Tut	torial session		-
	Su	pervision and consultation		-
	Pra	actical or experimental labo	ratory work	-
	Ind	lividual studies		4 hours
	Tot	tal workload per week		6 hours
	Pre	esentation		2 hours
	Cla	iss Project		-
	Fie	ld Trip		-
	Tot	tal workload per semester		96 hours
Credit noints	2			
Requirements prerequisites	- TG2	111 Introduction to Geophy	sics.	
	TG4	028 Geophysical Exploration	 1.	
Recommended	-	F - 0000		
prerequisites				
Learning Goals:				
Knowledge		Skill	Compete	nce
Familiar with		Able to obtain	 Possess ability to do the 	
contemporary fields		information and	actual rock mag	netic
related to geophysics (such		literature about rock	techniques fron	n sample
as earthquakes, tsunam	i	magnetism.	preparation to i	magnetic
and other natural hazar	ds,	 Able to grasp the 	measurement.	
earthquake monitoring	oring potential uses of		 Possess ability t 	o incorporate
from space, Community	, Community magnetic roc		rock magnetic t	echniques as
preparedness, Earth's		characterization in	supplement to	oroader
magnetic field, rock		fields such as	geophysical stu	dies.
magnetism, limnology,		exploration of	Possess an exte	nsive
agriculture geophysics).		resources to	knowledge tof s	pace -based
Understand the challen	nges	environmental	tools to monito	r disaster.
and opportunities is his/	/her	problems.	 Possess ability t 	o explain the
future career in geophy	SICS	• Able to describe the	tsunami ready p	program.
and related fields.		space-based tools to	Having sound u	nderstanding
		monitor disaster.	on contempora	ry issues
		Able to describe the teupami		ring lectures
		tsunami ready	and on self or a	roup study
		program.	using the availa	hle resources
			including the in	ternet
Content	Givi	ng the new research or last r	nethods in Sciences a	Ind Geophysical
	Engi	neering. The student able to	o make the actual top	ics for research
	and	exploration in Geophysics,	given by our guest lea	cturers.

Study and examination							
requirements and forms of	Midterm test	\checkmark	35%				
examination	Final Test	\checkmark	35%				
	Assignments and quizzes	\checkmark	20%				
	Presence	\checkmark	10%				
	Students are considered to be	competent and	l pass if at least get 50%				
	of maximum mark of the e	xams and assi	gnments. Assignments				
	include paper's review, oral p	resentation, and	d term paper.				
Media employed	Slides, beamer, boards, appro	priate software	, online				
	communication, internet, exe	rcises, lab visit,	etc.				
Reading list	1. Butler, R. F., 1998, Pal	eomagnetism:	Magnetic domains to				
	geologic terranes: Electro	nic Edition, Uni	versity of Arizona.				
	2. Evans, M. E., Heller,	F.,2003, Enviro	onmental Magnetism:				
	Principles and Applicatio	ons of Enviror	imagnetic,s, Academic				
	Press.						
	3. Awange, J. L., 2012, En	Vironmental IVI	onitoring using GNSS:				
	Modia	e systems, spin	iger science & business				
	A Tauva I 2014 Essentia	als of Palaoma	anatism: Second Web				
	Edition Scripps Institution	n of Oceanogram	hy				
		i oi occanogra	Jiry.				
	Students are also invited to se	Students are also invited to see videos, such as the followings:					
	1. Disasters in Indonesia						
	(https://www.youtube.com	m/watch?v=B09	əy9AQYZ-U)				
	2. Tools to Detect Earthquak	es					
	(https://www.youtube.com	m/watch?v=315	5jEnw2CZQ).				
	3. Capita Selecta in Geophys	ics: Episode 1 N	lagnetic Field				
	(https://www.youtube.com	m/watch?v=Hi_	S20qZI_0)				
	4. Capita Selecta in Geophys	ics: Episode 4 R	ock Magnetism				
	(https://www.youtube.com	m/watch?v=ZL2	ZyHc_TO4)				
	5. Capita Selecta in Geophys	ics: Episode 13	What is Limnology?				
	(https://www.youtube.com	m/watch?v=DzL	.5NNkPFUo)				
	Students are also invited to vi	sit the following	g YouTube channels				
	Geophysics for Everyone	hannal/UCCi=C					
	(intips://www.youtube.com/c	nanner/UCCJpS	ιιιοννωτευμευμεκκα_Q)				
	Endra Gunawan FTTM ITB						
	(https://www.youtube.com/c	hannel/UCVDit	ZUF4CSt7aHhvr2fhHw)				

45. Design in Geophysical Engineering

Module designation	Design in Geophysical Engineering	
Module level	Bachelor	
Code, if applicable	TG4047	
Sub-heading, if applicable:	-	
Courses included in the	Design in Geophysical Instrumentation	
module, if applicable:		
Semester(s) in which	Seventh or Eight Semester / Fourth Year	
module is taught		
Module coordinator(s)	Dr. Ir. Agus Laesanpura, M.S.	
Lecturer(s)	Dr. Ir. Agus Laesanpura, M.S.	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	students present course materials in none of class using	
	slide in LCD projector, followed by discussion session.	N
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	
	current issues and course material	v
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss together	
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trin	
	Visit field area or company which is related to course	
		-
	material.	

Workload							
	Cla	ass lectures	2 hours				
	Tu	torial session			-		
	Su	pervision and consultation	1		-		
	Pra	actical or experimental lab	oratory wo	ŕk	-		
	Inc	dividual studies	•		4 hours		
	То	tal workload per week			6 hours		
	Pre	esentation			2 hours		
	Cla	Class project					
	Fie	Field trip -					
	То	tal workload per semester			96 hours		
Credit points	2						
Requirements prerequisites							
Learning Goals							
Knowledge		Skill		Compete	nce		
Understand basic		Able to solve a probl	em •	Possess the capability o			
knowledge of design in		for engineering case engineering pro		problems			
geophysical methods		using geophysical	ĺ	identification and			
 Understand to match 	method solving using						
geophysical methods to		Able to optimize the		geophysical r	methods		
application in Engineering		multi parameter in	•	Planning and designing			
		geophysics for		a simple geophysical			
engineering		engineering case		survey			
Content	Des	ign in geophysics related t	o problem :	solving of en	gineering case		
	(inti	rastructure). Optimizatio	on of mu	ultiparamete	r geophysics		
	equ	ipped with case studies.					
Study and examination							
requirements and forms of	Mi	dterm test	√	309	%		
examination	Fir	nal Test		309	%		
	At	tendance, quizzes,		409	%		
		mework	•				
	Lal	boratory work	-	-			
Media employed							
Reading list	She	riff, R.E., Geophysical Metl	hods, , Pren	tice Hall,			
Reynolds, J.M., An Introduction to Applied and Environmental					nmental		
	Geophysics, , John Wiley and Sons Ltd.						

46. Special Topic in Geophysics

Module designation	Special Topic in Geophysics	
Module level	Bachelor	
Code, if applicable	TG4063	
Sub-heading, if applicable:	-	
Courses included in the	Special Tenic in Geophysics	
module, if applicable:		
Semester(s) in which module	Seventh Semester / Fourth Year	
is taught		
Module coordinator(s)	Dr.rer.nat. R. Mohammad Rachmat ST., MT	
Lecturer(s)	Dr.rer.nat. R. Mohammad Rachmat ST., MT; Dr. Eng. Fern	ando
	Lawrens Hutapea, ST., MT	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
nours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	\checkmark
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem	
	Practical or ovnorimental laboratory work	
	Students de resetiel es experimental in the	
	success approximate practical medule. Firstly	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tells main idea of practical or	
	experimental. They do the practical afterwards.	
	Field Trip	,
	Visit field area or company which is related to course	\checkmark
	material.	

Workload						
	Class	lectures				2 hours
	Tuto	rial session				-
	Supe	rvision and consultatior	า			-
	Pract	ical or experimental lab	orator	y work		-
	Indiv	idual studies				4 hours
	Tota	workload per week				6 hours
	Prese	entation				-
	Class	Project				-
	Field	Trip				-
	Total	workload per semester				96 hours
Cradit aciata	2					
Credit points Requirement's prorequisites	Z Tho ct	udants should be in the	1 th vor)r		
Requirement s prerequisites	The st		4 yea	11.		
Learning Goals:						
Knowledge		Skill			Compet	ence
Understand more deeply	the	The students will	be	• Th	e stude	nts will be
relationship between		able to develop n	ew	ab	le to tal	k in the
geophysical application a	nd the	businesses relate	d to	communities about		ies about
current energy issues. Stu	udents	the environmenta	al-	the current situation		nt situation
will be motivated to awa	re	friendly energy se	ector.	of energy issues in		issues in
about the importance of				Inc	Indonesia by showing	
environmental protection	٦			an	d conne	ecting
during the development of				re	cent dat	a.
energy in Indonesia.						
Content	Oil an	d Gas bussiness, Hydroc	arbon	Reservoi	r, geoth	ermal, green
	energy	y, CCS/CCUS.			-	-
Study and examination					-	
requirements and forms of	Midt	erm test		-		-
examination	Final	Test				50%
	Assig	nments and quizzes				50%
	Labo	ratory work		-		-
	Stude	nts are considered to be	e comp	etent and	d pass if	at least get
	50% o	f maximum mark of the	exams	and assi	gnment	.s.
	Assign	ments include paper's r	eview,	oral pre	sentatio	on, and term
	paper			()	P	
iviedia employed	Sildes,	beamer, boards, appro	rcicco	sontware	, online	
Reading list	1	IPCC 2007 Climate C	hange	2007. Th	o Dhucic	al Science
	<u>т.</u>	Basis Contribution of	Worki	ng Grour	o I to the	a science
		Assessment Penart of	the In	torgover	nmenta	l Danel on
		Climata Change Com	hridae			
	_		ninge	oniversit	y Press,	, and he are
	2.	вР, 2021, Statistical R	eview	of world	Energy,	, 70 th edition
	3.	Dewan Energi Nasion	al, 2020	D, Baurar	n Energi	Nasional
		2020.				

47. Job Training

Module designation	Job Training	
Module level	Bachelor	
Code, if applicable	TG4067	
Sub-heading, if applicable:	-	
Courses included in the	loh training	
module, if applicable:		
Semester(s) in which module	Seventh Semester / Fourth Year	
is taught		
Module coordinator(s)	Dr. Zulfakriza, S.Si.,MT,	
Lecturer(s)	Dr. Zulfakriza, S.Si.,MT, Silvia Jannatul Fajar ST,MT	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact	Class lectures	
nours	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	-
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	
	session. After presentation, they make report what	,
	they present before	
	Tutorial sossion	
	Lecturer gives students some problem beforenand. In	1
	company, students explain how to solve the problem	N
	in groups. Mentor checks how they solve the problem	
	in turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of project. Students	,
	consults problem which they face and discuss	
	together how to solve the problem	
	Dractical or experimental laboratory work	
	Studente de grantinellar aboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tells main idea of practical or	
	experimental. They do the practical afterwards.	
	Field Trip	
	Visit field area or company which is related to course	
	material.	

Tutorial session 5 hour Supervision and consultation - Practical or experimental laboratory work - Individual studies 20 hours Total workload per week (duration: 4 weeks) 25 hours Presentation 2 hours Class Project - Field Trip Optional Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Supervision and consultation-Supervision and consultation-Practical or experimental laboratory work-Individual studies20 hoursTotal workload per week (duration: 4 weeks)25 hoursPresentation2 hoursClass Project-Field TripOptionalTotal workload per semester102 hoursCredit points2Requirements prerequisites-Recommended prerequisites-Learning Goals:-
Practical or experimental laboratory work - Individual studies 20 hours Total workload per week (duration: 4 weeks) 25 hours Presentation 2 hours Class Project - Field Trip Optional Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Learning Goals: -
Individual studies 20 hours Total workload per week (duration: 4 weeks) 25 hours Presentation 2 hours Class Project - Field Trip Optional Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Total workload per week (duration: 4 weeks)25 hoursPresentation2 hoursClass Project-Field TripOptionalTotal workload per semester102 hoursCredit points2Requirements prerequisites-Recommended prerequisites-Learning Goals:-
Presentation 2 hours Class Project - Field Trip Optional Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Class Project - Field Trip Optional Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Field Trip Optional Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Total workload per semester 102 hours Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Credit points 2 Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Requirements prerequisites - Recommended prerequisites - Learning Goals: -
Recommended prerequisites - Learning Goals:
Learning Goals:
Knowledge Skill Competence
Students understand the work Able to work as Possess ability to
environment in company and employee. work according to job
know the role of geophysics. • Write the report and desk of geophysicist.
make a presentation
ContentStudents work in a company or government's office for about one month to follow the program given by the company or government's office. The job should be related to geophysics. The focus of the study and location of the company are chosen by the student themselves. This activity is
Media employed Eollowing the company's facilities
Reading list Following the research tonic/the focus of study.

48. Geotomography

Module designation	Geotomography	
Module level	Bachelor	
Code, if applicable	TG4128	
Sub-heading, if applicable:	-	
Courses included in the	Contomography	
module, if applicable:	Geotomography	
Semester(s) in which module	Seventh Semester / Fourth Year	
is taught		
Module coordinator(s)	Dr. Andri Dian Nugraha	
Lecturer(s)	Dr. Andri Dian Nugraha, Dr. T.A. Sanny	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	ICD projector and whiteboard	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material	
	Current issues and course material.	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss	
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tells main idea of practical or	
	experimental. They do the practical afterwards.	
	Field Trip	
	Visit field area or company which is related to course	_
	material	

Workload				
	Class lectures		3 hours	
	Tutorial session		-	
	Supervision and consultation		-	
	Practical or experimental laborate	ory work	-	
	Individual studies		6 hours	
	Total workload per week		9 hours	
	Presentation		-	
	Class Project		-	
	Field Trip		-	
	Total workload per semester		144 hours	
Credit points	3			
Bequirements prerequisites	-			
Recommended prerequisites	-			
Learning Goals:				
			1	
Knowledge	Skill	Compete	ence	
• Understand the bas	sic • Familiar in basic concepts	Possesses	in basic	
concepts of geotomograp	ny of geotomography	concepts c	of seismic	
imaging technology	imaging technology	geotomograp	ny	
Onderstand procedure	• Able to create procedure	technology		
geotomography	or geotomography	Able to creat	e procedure	
Onderstand data acquisition of gootomography	on Familiar in data		apily in data	
or geotomography	acquisition of	Familiar	in data	
Onderstand ray tracing fro	m geotomography	acquisition	UI UI	
Source to receiver	• Able to create program geotomograp		to program	
Onderstand mathematic	code of ray tracing from	 Able to create a code of ray to code of ray to create a code of r	recipation from	
tomography	• Abla to determine	source to rec		
Linderstand matrix equation	• Able to determine source to receiver			
Onderstand matrix equation of delay time tomography	Understand matrix equation mathematical equation of Able to determine to deter			
of delay time tomography	• Able to matrix equation of	of delay time	tomography	
Onderstand delay till tomographic inversion	Able to matrix equation of delay time tomography			
Linderstand resolution to	et Eamiliar in dolay time	• Able to mati	tomography	
Onderstand resolution te	tomographic inversion	• Eamiliar in	delay time	
of tomographic inversion	of Eamiliar in resolution test	• Familiai III	inversion	
• Onderstand application	of tomographic inversion	 Eamiliar in region 	solution test	
geotomography	Eamiliar in application of	• rannar in re	solution test	
		Eamiliar in ar	polication of	
	geotomography		by	
		Scotomograp	, , , , , , , , , , , , , , , , , , ,	
Contont	The topics subject are featured into the	following or htor:	fundamental	
Content	concept of gootomography and its	application of cut		
	reconstruction on local (active fault us	application of SUD	cross hole atc)	
	regional (such as geodynamics of iclas	nd are and subducti	(1033 11010 etc),	
	alohal scale (2-D image of earth int	region and plume +	ectonics) data	
	acquisition step reconstruction of	image narameter	ization model	
	raytracing methodology. determining	g matrix of seismi	tomography.	

	tomographic inversion, damp interpretation.	ing application,	resolution test and
Study and examination			
requirements and forms of	Midterm test		
examination	Final Test		equal
	Assignments and quizzes		
	Laboratory work	-	-
		•	<u> </u>
Media employed	Slides, beamer, boards, appro	opriate software	, online
	communication, internet, exe	ercises, lab visit,	etc.
Reading list	1. Nugraha, A. D. (201	7). Tomografi S	<i>Seismik,</i> Penerbit ITB
	Press, ISBN 978-602-5	5417-48-1.	
	2. Zhao, D. (2019). Mult	iscale Seismic T	omography, Springer
	Geophysics, ISBN 978	8-4-431-55359-5	
	3. Iyer H.M. and Hirahara, K. (Ed.), 1993. Seismic		
	<i>Tomography: Theory</i> London.	and Practice. Ch	napman & Hall,
	4. Nolet, G. (Ed.), 1987.	Seismic Tomogr	aphy with
	applications in global acophysics, D. Reidel	seismology and	exploration
	5. Press W.H. et al. 199	92. Numerical Ri	ecines. Cambridge
	University Press, Cam	bridge.	
	6. Sanny, T. A., 2000, Geotomografi (diktat Kuliah), Jurusa Teknik Geofisika ITB		
	7. Widiyantoro, S. Dikta	t Kuliah GF435 ('Tomografi
	Geofisika), Jurusan G	eofisika dan Me	teorologi, FIKTM,
	ITB, dan referensi di dalamnya.		

49. Engineering & Environmental Geophysics

Module designation	Engineering & Environmental Geophysics	
Module level	Bachelor	
Code, if applicable	TG4142	
Sub-heading, if applicable:		
Courses included in the	Engineering & Environmental Geophysics	
module, if applicable:		
Semester(s) in which	Seventh Semester / Fourth Year	
module is taught		
Module coordinator(s)	Dr. Wahyudi Widyatmoko Parnadi	
Lecturer(s)	Dr. Widodo, Dr. Wahyudi Widyatmoko Parnadi	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	students present course materials in none of class using	
	side in LCD projector, followed by discussion session.	N
	After presentation, they make report what they present	
	before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	\checkmark
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	current issues and course material	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss together	
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	2
	material	N
	material.	

Workload			
	Class lectures		
	Tutorial session		
	Supervision and consultation		
	Practical or experimental laborate	ory work -	
	Individual studies	4 hours	
	Total workload per week	9 hours	
	Presentation	6 hours	
	Class project	-	
	Field trip	10 hours	
	Total workload per semester	144 hours	S
Cradit paints	2		
Requirements prerequisites	5 1 TG3241 Geoelectrical and F	ectromagnetism	
Requirements prerequisites	2 TG2260 Gravity and Magnet	icc	
	2. TG3200 Glavity and viagnet		
	3. TG2240 Seismic Refraction.		
Decommonded	4. 1G3261 Seismic Reflection L	Data Acquisition & Processing	
prerequisites	-		
prerequisites			
Learning Goals	CI:II	Commentance	
Knowledge	SKIII	Competence	
 Understand basic knowledge of geophysica methods Understand engineering and physical properties o rocks Understand problems in engineering and environment (EE) Understand to match geophysical methods to application in EE Understand to conduct p and design a geophysical survey Understand to process ar interpret EE integrated geophysical data 	 Able to recognize problems in EE Know the basics of exploration methods in geotechnical engineering, geological engineering, and hydrology Able to recognize the appropriate geophysical methods suitable for distinct EE problems Able to plan and design simple survey design for engineering and environmental purposes Able to conduct basic processing & interpretation of EE geophysical data 	 Possess the capability of engineering and environmental problems identification and solving using geophysical methods Planning and designing a simple geophysical survey Familiar in conducting geophysical survey Familiar in processing and interpreting basic geophysical data Familiar in drawing conclusion from results of geophysical surveys 	
Content	Introduction: the meaning and role of ge	ophysics for solving engineering a	nd
	environmental problems, case examples of the application of engineering		
	and environmental geophysics; physical and engineering properties;		
	seismology is geolecimical exploration. Sounding, boring etc., engineering		
	and non-seismic (gravity, magnetic, DC-resistivity, electromagnetics)		
	exploration for hydrogeology, geotechnics and environment; geohazards:		
	landslide and other phenomenon; stres	s and strain in soils/rocks; seepa	ige
	and flow net; well-logging; case studies.		

Study and examination				
requirements and forms of	Midterm test		45%]
examination	Final Test		35%	
	Quizzes, homework		20%	
	Laboratory work	-	-]
Media employed	Slides, beamer, whiteboards	, appropriate s	oftware, online	
	communication, internet, ex	ercises, etc.		
Reading list	1. Reynolds, J.M.,	An Introducti	ion to Applied	and
	Environmental Geor	physics, 2nd Ec	lition, ISBN: 978-0-	471-
	48535-3,2011.			
	2. Beblo, M. (ed.), Umweltgeophysik, Ernst & Sohn, 465 pp.,			
	1997.			
	3. Derringh, E., Compu Hall, Inc., 322 pp., 19	tational Engine 998.	ering Geology, Pren	tice-
	4. Keys, W. S., A Prac	tical Guide to	Borehole Geophysi	cs in
	Environmental Inves	tigations, SRC F	Press, Inc., 176 pp., 1	.997.
	5. Sharma, P. V., 19	97, Environm	ental and Engine	ering
	Geophysics: Cambrid	dge University I	Press.	
	 Ward, S. H. (ed.), Geotechnical & Environme Geophysics, Soc. Expl. Geophys., 1032 pp., 1990. 			ental
	7. Parnadi, W.W., 2008, Diktat Kuliah Geofisika Teknik			dan
	Lingkungan.			

50. Rock Physics

Module level Bachelor Code, if applicable: TG4166 Sub-heading, if applicable: - Courses included in the module, if applicable: Rock Physics Semester(s) in which module is taught Seventh Semester / Fourth Year Module coordinator(s) Dr. Fatkhan Lecturer(s) Dr. Fatkhan Language Bahasa Indonesia Relation to curriculum Elective Subject / Elective Course Type of teaching, contact hours Class lectures LCD projector and whiteboard.	Module designation	Rock Physics	
Code, if applicable TG4166 Sub-heading, if applicable: Acck Physics Semester(S) in which module Seventh Semester / Fourth Year is taught Dr. Fatkhan Module coordinator(S) Dr. Fatkhan Language Bahasa Indonesia Relation to curriculum Elective Subject / Elective Course Type of teaching, contact Intervent Semester / Fourth Year hours Class lecturers Lecturer teaches students in class. There will be pop quizzes, task, or homework in some classes. Lecturer ying side in LCD projector and whiteboard. Presentation Students present course material using media such as slide in LCD projector and whiteboard. Presentation Students present course materials in front of class using slide in LCD projector, followed by discussion vi session. After presentation, they make report what they present before. Tutorial session Lecturer gives students some problem beforehand. In class students explain how to solve the problem in vi groups. Lecturer checks how they solve the problem in vi current issues and course material. Supervision and consultation This activity is continuation of class proj	Module level	Bachelor	
Sub-heading, if applicable: - Courses included in the module, if applicable: Rock Physics Semester(s) in which module is taught Seventh Semester / Fourth Year Module coordinator(s) Dr. Fatkhan Leaturer(s) Dr. Fatkhan Language Bahasa Indonesia Relation to curriculum Elective Subject / Elective Course Type of teaching, contact Noresentation in class. There will be pop quizzes, task, or homework in some classes. Lecturer or presents course material using media such as slide in LCD projector and whiteboard. Presentation Students present course materials in front of class using slide in LCD projector, followed by discussion vi session. After presentation, they make report what they present before. Tutorial session Lecturer gives students some problem beforehand. In class students explain how to solve the problem in vi groups. Lecturer checks how they solve the problem in turns. Class project and discussion Lecturer gives students a project which related to current issues and consultation This activity is continuation of class project. Students consults problem which they face and discuss to together how to solve the problem in turns. Class project and discussion I Lecturer gives students a project which related to current issues and consultation Prescriation This activity is continuation of class project. Students consults prob	Code, if applicable	TG4166	
Courses included in the module, if applicable: Rock Physics Semester(s) in which module is taught Seventh Semester / Fourth Year Module coordinator(s) Dr. Fatkhan Language Bahasa Indonesia Relation to curriculum Elective Subject / Elective Course Type of teaching, contact hours Class lectures Lecturer(s) Class lectures Lecturer teaches students in class. There will be pop quizzes, task, or homework in some classes. Lecturer √ Presentation Class lectures Using slide in LCD projector and whiteboard.	Sub-heading, if applicable:	-	
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experimental. They do the practical afterwards. Field Trip Visit field area or company which is related to course - material.		laboratory accistant tells main idea of practical or	
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Visit field area or company which is related to course - material.		Experimental. They do the practical afterwards.	
Visit field area or company which is related to course - material.			
material.		Visit field area or company which is related to course	-
		material.	

Workload				
	Class lectures			2 hours
	Tutorial session		1 hours	
	Supervision and consultation			-
	Practical or experimental laboratory work			-
	Indiv	Individual studies		
	Tota	workload per week		6 hours
	Prese	Presentation		
	Class	Project		-
	Field	Field Trip -		
	Total workload per semester 96 hours			96 hours
Cradit resists	2			
Credit points	Z	11 Coomathomathics I		
Requirement prerequisites		1 Seismic Poflection Data Acc	nuicition & Droc	occina
	TG220	15 Wave Theory in Geophysics		essing.
Recommended prerequisites	-		,	
Learning Goals:				
Knowledge		Skill	Со	mpetence
Understand how to analy	ze for	• Able to solve problems	• Pc	ssess ability
determining lithology,		related to rock physics	to	solve
porosity, pore fluids, and		(modelling, fluid	pr	oblems
saturation.		substitutions, effective	re	lated to rock
 Understand how to bridg 	Understand how to bridges medium theories). physics			iysics
seismic data and reservoi	eservoir • Capable to solve problems challenges.		allenges.	
properties and paramete	rs.	related to rock digital.		
Understand the effects or	t	• Able to solve problems		
various rock and reservoi	r	related to seismic		
parameters on seismic		anisotropy.		
properties.	ability			
and assumptions of rock	abiiity			
nhysic				
pilysic.				
Content	Stude	nt are expected to understand	d how elastic pr	operties of
	rock c	hange when fluid fills the rocl	, concept of ef	fective
	mediu	m theory, physical modelling	to help underst	tand in wave
	propa	gation and anisotropy of rock		
Study and examination				
requirements and forms of				
examination	Midterm test V 30%			
	Final	lest v	40%	
	Assig	nments and quizzes $$	30%	
	Labo	ratory work -	-	if at laget ant
		the considered to be com	petent and pass	in at least get
Media employed	White	hoard and software compute	or.	
	winte	soara, and sortware compute	-1.	

Reading list	1. Avseth, P., Mukerji, T., and Mavko., G., 2005,
	Quantitative Seismic Interpretation: Applying Rock
	Physics Tools to Reduce Interpretation Risk, Cambridge Univ. Press.
	2. Mavko, G., Mukerji, T., and Dvorkin, J., 1998, the rock
	physics handbook: tools for seismic analysis in porous
	media: Cambridge Univ. Press.
	3. Mavko, G., 2000, Rock Physics for Geophysical Reservoir
	Characterization and Recovery Monitoring, Rock Physics
	laboratory, Stanford University.
	4. Schon, J., 2004, Physical Properties of Rock:
	Fundamentals and principles of Petrophysics, Elsevier.
	5. Thomsen, L, 2002, Understanding Seismic Anisotropy in
	Exploration and exploitation, SEG.
	6. Wang, Z, 2001, Fundamentals of rock physics:
	Geophysics, vol 66, 398-412.

51. Final Project II

Module designation	Final Project II	
Module level	Bachelor	
Code, if applicable	TG4092	
Sub-heading, if applicable:		
Courses included in the	Final Project II	
module, if applicable:		
Semester(s) in which	Seventh Semester / Fourth Year	
module is taught		
Module coordinator(s)	Dr. Warsa	
Lecturer(s)	Dr. Warsa	
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	-
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session	
	After procentation, they make report what they procent	
	After presentation, they make report what they present	
	lutorial session	N
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	-
	Lecturer gives students a project which related to	
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	•
	consults problem which they face and discuss together	
	how to solve the problem	
	Practical or experimental laboratory work	-
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	
	material.	

Workload				
	Class lectures			
	Tutorial session	1 hour		
	Supervision and consultation	1 hour		
	Practical or experimental labor	atory work	-	
	Individual studies		7 hours	
	Total workload per week		9 hours	
	Presentation		2 hours	
	Class project		-	
	Field trip		Optional	
	Total workload per semester		144 hours	
Credit points	3			
Requirement prerequisites	All Courses related to the final pr	oject topic		
Recommended	-			
prerequisites				
Learning Goals				
	CL :!!	6		
Knowledge	SKIII	Skill Competence		
Deep understanding of	Able to conduct Possess the capability to			
the selected topics and	geophysical data do the geophysical study			
the geophysical method	acquisition and/or	n and/or of a method case or a		
applied.	processing and/or	study area case, write its		
	interpretation to solve the	report and present it		
	selected problem.			
Content	Basic concept discussion regarding	ng topic which	is chosen as the	
	final project, progress report of t	he research, t	utorial, Final	
	project's proposal completion.			
Study and examination				
requirements and forms of	Basic concept comprehension	\checkmark	50%	
examination	Final Project result	\checkmark	10%	
	Proposal's presentation and			
	examination, knowledge	\checkmark	40%	
	improvement			
Media employed	Slides, beamer, whiteboards, app	propriate soft	ware, online	
	communication, internet, exercises, etc., and also some			
	geophysical instruments depend on the topic of the final project			
	student work on			
Reading list	Literature depends on the topic of the final project			

52. Economical Geophysics and Management

Module designation	Economical Geophysics and Management	
Module level	Bachelor	
Code, if applicable	TG4269	
Sub-heading, if applicable:	-	
Courses included in the	Economical Geophysics and Management	
module, if applicable:		
Semester(s) in which module	Eighth Semester / Fourth Year	
is taught		
Module coordinator(s)	Dr. T. A. Sanny	
Lecturer(s)	Dr. T. A. Sanny, Prof.Dr.Ir. Sigit Sukmono, M.Sc.	
	Prof.Dr.rer.nat. Awali Priyono	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
nours	Class lectures	
	Lecturer teaches students in class. There will be pop	1
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	-
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload				
	Class lectures			2 hours
	Tutorial session			-
	Supervision and consultation		_	-
	Practical or experimental laboratory work			-
	Individual studies			4 hours
	Total workload per week			9 hours
	Presentation			-
	Class project			-
	Field Trip			-
	Total workload per semester			96 hours
Credit points	2			
Requirements prerequisites	-			
Recommended prerequisites	-			
Learning Goals				
Knowledge	Skill		Comp	etence
Understanding 'state of	Able to proficient in basic	•	Possess n	nake own
the art' business in	entrepreneurial resources,		business	related with
technology and	entrepreneurial leadership, ar	nd	geophysic	cs
geophysical	entrepreneurial strategy.			
	concept of economy, economic model, economic model on desaster, economic model of earth desaster prevention, mortability model, mortability table, liability, the cost of capital of geophysical exploration; Basic concept, specific source of capital, managerial finance on exploration and exploitation, service marketing on geophysic, economics forecast on exploration and exploitation. The marginal cost and investment decision, gambling and risk management on exploration and exploitation, identification of risk measurement, creating competitive advantages, strategic management and formulation, and creating new opportunities on geophysical economy and business.			
Study and examination	Midterm test			30%
requirements and forms of	Final Test	1		40%
examination	Attendance, quizzes,			30%
	Laboratory work	-		-
Media employed	Slides, beamer, boards, appropria	ate softw	/are, online	
	communication, internet, exercis	se, etc.		
Reading list	1. Freeman, C., 1999, The Economi	ics of Inno	ovation, An E	lgar Reference
	Collection.			
	2. Dess, G.G., Lumpkin, G.T., Eisne	er, A.B, 20	07,Strategic	Management,
	Gitman LL 2006 Principle of M	lanagoria	l Financo De	arson Int Edit
	4 Khalil T 2000 Management of Technology McGraw-Hill			
	5. Lovelock, C&Wright,	L.,Princi	ples o	f Service
	Marketing&ManagementPrentice-Hill.			
	6. Pindyck, R.S& Rubinfeld, D.L., 1998, Econometric Models&Economic			
	Forecasts, Irwin-McGraw-Hill.	Donorhi+	Drovinci N	anggroo Acab
	Darussalam.			

53. Volcanology and Geothermal Exploration

Module designation	Volcanology and Geothermal Exploration	
Module level	Bachelor	
Code, if applicable	TG4243	
Sub-heading, if applicable:		
Courses included in the	Volcanology and Geothermal Exploration	
module, if applicable:		
Semester(s) in which	Eighth Semester / Fourth Year	
module is taught		
Module coordinator(s)	Prof. Djoko Santoso	
Lecturer(s)	Dr.Ir. Fatkhan, MT, Dr.rer.nat. R. Mohammad Rachmat ST,	ИТ, Prof.
	Dr. Ir., Djoko Santoso, M.Sc., Faridz Nizar Ahmady, S.T., M.T	Г.
Language	Bahasa Indonesia	
Relation to curriculum	Major Subject / Compulsory Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	guizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	,
	ICD projector and whitehoard	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector followed by discussion session	
	After procentation, they make report what they procent	-
	After presentation, they make report what they present	
	before.	
	lutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	_
	consults problem which they face and discuss together	-
	how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	\checkmark
	material.	
WORKIOAU	Class lasturas	2 hours
-----------------------------------	--	----------------
		3 hours
	Futorial session	-
	Supervision and consultation	-
	Practical or experimental laboratory work	-
	Individual studies	6 hours
	Total workload per week	9 hours
	Presentation	-
	Class project	-
	Field trip	4 hours
	Total workload per semester	148 hours
Credit noints	3	
Bequirements prerequisites	1 GI 2111 Physical Geology	
Requirements prerequisites	2 CL2212 Tostonenhusias	
	2. GL2213 Tectonophysics.	
	3. TG3260 Gravity and Magnetics.	
	4. TG3241 Geoelectrical and Electromagnetism.	
Recommended	-	
prerequisites		
Learning Goals		
Knowledge	Skill Competence	2
Understanding	Able to explain the origin of Possess the	
volcanism.	igneous and volcanic rocks. competence to e	explain
 Understanding 	Able to explain volcanic of magmatic act	ivity
volcanic geology in	geology in Indonesia, their and their produc	cts.
Indonesia region.	geological conditions. • Possess the	
Understanding the	structure stratigraphy and competence to e	explain
nature of	status of their activity.	and
geothermal energy	Able to propose suitable their activity in	
 Understanding 	geophysical method for Indonesia region	,
geothermal	geothermal exploration Possess the care	hility of
ovploration	especially in volcanic area	nhysical
	• Able to follow the	nal
	Able to follow the data in geotherm	
geological,	activities using geological	
geochemical and	activities using geological, • Possess the	maka an
geophysical	geochemical and geophysical competence to r	nake an
methods.	methods. comprehensive	
	Able to collect necessary geothermal pros	pect
	data for reserve allocation interpretation.	
	• Possess the capa	
	calculate geothe	rmai
	reserve.	
Content	Student are expected to understand volcanoos	in Indonasia
Content	Structure of volcanoes its physical and chamic	al properties
	geothermal as one of major energy sources goothe	rmal fields in
	Indonesia exploration methods in geothermal	

Study and examination				
requirements and forms of	Midterm test	\checkmark	30%	
examination	Final Test		40%	
	Quizzes, assignment	\checkmark	30%	
	Laboratory work	-	-	
Media employed	Slides and LCD projectors, v	/hiteboards, coi	nputer	
Reading list	1. Armstead, H.C.H. G	eothermal Ener	gy. J. Willey, 1978.	
	2. Ellis, A.J. & Mahon,	W.A.J. Geocher	nistry and Geotherm	nal
	System. Academic F	Press, 1977.		
	3. Keller, G.V. Explorat	ion for Geothe	rmal Energy. Dev. In	
	Geophysics, Exp. Method 2, ed. A.A. Fitch, Ap. Sci.Pub,			
	1981.			
	4. Rybach, L & Muffler	, L.J.P. Geother	mal System Principle	2S
	and Case Histories.	J. Willey, 1981.		
	5. Santoso, D. Eksplorasi Energi Geothermal. Diktat Kuliah,			
	Penerbit ITB, 2000.			
	6. Schmincke, H. U., V	olcanism, Spring	ger verlag, 2004.	
	7. Bullard, F.M., Volca Press, 1977.	, F.M., Volcanoes of the Earth. Univ. of Queensland 1977.		ind
	8. Civetta, L., Gasparir	ii, P., Luongo, G	. &Rapalla, A., Physic	cal
	Volcanology. Elsevie	er, 1974.		
	9. de Broer, J.Z. and Sa	anders, D.T., Vo	lcanoes in Human	
	History: The far-rea	ching effects of	major eruptions,	
	Princeton Univ. Pre	ss, 2002.		
	10. Santoso, D., Diktat I	Kuliah Volkanof	isik. Penerbit ITB, 20	00.

54. Numerical Simulation of The Earthquake

Module designation	Numerical Simulation of the Earthquake	
Module level	Bachelor	
Code, if applicable	TG4223	
Sub-heading, if applicable:		
Courses included in the	Numerical Simulation of the Farthquake	
module, if applicable:		
Semester(s) in which module	Eighth Semester / Fourth Year	
is taught		
Module coordinator(s)	Dr. Wahyu Triyoso, M. Sc.	
Lecturer(s)	Dr. Wahyu Triyoso, M. Sc.	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	_
	session After presentation they make report what	
	they present before	
	Tutorial accessor and discussion	
	I utorial session and discussion	
	Lecturer gives students some problem beforehand. In	,
	class students explain how to solve the problem in	\checkmark
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem	
	Dracticel en ovnerimentel leberatery werk	
	Studente de prostiester en entreties de la filo	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tells main idea of practical or	
	experimental. They do the practical afterwards.	
	Field Trip	
	Visit field area or company which is related to course	-
	material.	

Workload			
	Class lectures		
	Tutorial session	3 hours	
	Supervision and consultation		
	Practical or experimental laboratory work	-	
	Individual studies	3 hours	
	Total workload per week	9 hours	
	Presentation	-	
	Class project	-	
	Field Trip	-	
	Total workload per semester	144 hours	
Credit points	3		
Requirement's prerequisites	1. TG2205 Wave Theory in Geophysics.		
	2. TG3132 Earth Crust Mechanics.		
	3. TG3120 Seismology.		
Recommended prerequisites	-		
Learning Goals			
Knowledge	Skill	Competence	
Understanding the seism	• Able to make an elastic • Po	ssess the ability to	
wave propagation theory	wave propagation do	a simple model of	
Understanding basic thec	ry model bo	dy wave model	
of Green Function and	Able to model seismic Po	ssess the ability to	
Convolution	source of the do	surface wave model	
extracting of source funct	ion Able to model body and		
of the earthquake and ac	ive surface wave		
fault mechanism			
Content	Numerical Simulation of The Earthquak	o is addressed to	
Content	understand the mechanics of the earth	uake faulting and	
	understanding of Seismic Wave transmission	and attenuation also	
	its effect in seismic ground shaking.		
Study and examination	5 5		
requirements and forms of	Midterm test $$	40%	
examination	Final Test $$	40%	
	Attendance, quizzes,	20%	
	homework	2070	
	Laboratory Work -	-	
Media employed	Slides, beamer, boards, appropriate software	e, online	
	communication, internet, exercises, etc.		
Reading list	1. Udias, A., Principle of Seismology, Cambr	idge University Press,	
	Cambridge, 1999.		
	2. Stelli and IVI. Wysession, 2002, All Introd	ell Publishing	
	3. Scholz C. H. 1990 The Mechanics	and The Farthquake	
	Faulting. Cambridge and University Press	. Cambridge.	
	4. Mattew, J. H. and Fink, K. D, 1992, Num	erical Methods Using	
	Matlab, 3rd Ed, Prentice Hall.		

55. Applied Seismology

Module designation	Applied Seismology	
Module level	Bachelor	
Code, if applicable	TG4225	
Sub-heading, if applicable:	-	
Courses included in the	Applied Seismology	
module, if applicable:		
Semester(s) in which module	Eighth Semester / Fourth Year	
Module coordinator(s)	Dr. Wabyu Triyoso, M.Sc	
lecturer(s)	Dr. Wahyu Triyoso, M.Sc.	
	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be non	
	quizzes task or homowork in some classes. Lesturer	
		N
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	\checkmark
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	_
	groups Locturer checks how they solve the problem in	
	turns	
	Class project and discussion	
	Lecturer gives students a project which related to	_
	surrent issues and source meterial	-
	Supervision and consultation	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss	
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	_
	material	

Workload			
	Class lectures	2 hours	
	Tutorial session	-	
	Supervision and consultation	-	
	Practical or experimental laboratory work	-	
	Individual studies	4 hours	
	Total workload per week	6 hours	
	Presentation	-	
	Class project	-	
	Field Trip	-	
	Total workload per semester	144 hours	
Credit points	2		
Requirement's prerequisites	TG3120 Seismology		
Recommended prerequisites	-		
Learning Goals			
Knowledge	Skill Compe	tence	
Understanding strong grou	und • Able to proficient in basic • Possess to	o construct	
motion due to earthquake	. analysis on strong ground the Seism	ic Hazard	
Understanding Ground Mo	otion motion and GMPE. Function	(SHF)	
Prediction Equation (GMP	E). • Able to proficient in • Possess the	ne ability to	
Understanding Seismicity	Rate determining seismicity make a sin	mple	
Modeling.	rate model. probabilis	tic and	
Understanding seismic has	ard Able to proficient in basic determini	deterministic hazard	
analysis and Seismic Hazar	d analysis on deterministic map.		
Function.	and probabilistic.		
Understanding local site offects	Able to proficient in basic analysis on amplification		
enects.			
Content	Review of seismology: seismic waves, earthquake sources, e	arthquake size:	
	Seismic hazard: types of seismic hazard; Strong ground r	notion: ground	
	motion parameters, estimation of ground motion paran	neters; Seismic	
	hazard analysis: identification and evaluation of earthout	quake sources,	
	deterministic seismic hazard analysis, probabilistic seismic ha	azard; Local site	
	effects: evidences from theoretical analysis and r	neasurements,	
	topography and basin effects; Ground motion design: des	ign parameters	
Study and examination			
requirements and forms of	Midterm test $$	40%	
examination	Final Test V	40%	
	Attendance, quizzes	4070	
	homework	20%	
	Laboratory work -	-	
Media employed	Slides beamer boards internet exercises etc		
Reading list	1. S.L. Kramer. Geotecnical Farthauake Fnainee	rina. Prentice	
0	Hall, New Jersey, 1996.	<i>,</i>	
	2. Bulletin of the Seismoloaical Society of America.		
	3. Bulletin Internasional Seismology and	d Earquake	
	Engineering		

56. Physics of the Earth's Interior

Module designation	Physics of the Earth's Interior	
Module level	Bachelor	
Code, if applicable	TG4226	
Sub-heading, if applicable:		
Courses included in the	Physics of the Farth's Interior	
module, if applicable:		
Semester(s) in which module	Eighth Semester / Fourth Year	
is taught		
Module coordinator(s)	Prof. Sri Widiyantoro	
Lecturer(s)	Prof. Sri Widiyantoro and Dr. Andri Dian Nugraha	
Language	Indonesian	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	
	session After presentation they make report what	•
	they present before	
	Tutorial acceler	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to colve the problem	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant conveys main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	

Workload			
	Class lectures		2 hours
	Tutorial session		-
	Supervision and consultation		
	Practical or experimental laborat	ory work	-
	Individual studies	•	3 hours
	Total workload per week		6 hours
	Presentation		1 hour
	Class project		-
	Field Trip		-
	Total workload per semester		96 hours
Credit points	2		
Requirements prerequisites	-		
Recommended prerequisites	-		
Learning Goals			
Knowledge	Skill	Compete	ence
Understand seismic	Able to conduct seismic	Have the abilit	y to apply
structure of the Earth's	modeling.	seismic metho	ds to image
Interior.	• Able to construct a simple	the Earth's int	erior
Understand thermal	geotherm.	structure.	
structure of the Earth's	Able to describe minerals of	Possess the ab	oility to
Interior.	the Earth's Interior. construct a steady state		eady state
Understand minerals of the	e • Able to explain various geotherm.		
Earth's Interior.	mantle convection	Familiar with r	ninerals of
Understand mantle	processes.	the Earth's Int	erior and its
convection processes.	tectonic implications (si		cations (slab
		pull etc.).	
		Familiar with	arious
		mantie convec	tion
		processes.	
Content	Understanding the physical prope	erties of the Farth'	s interior, i.e.
	crust. lithosphere. mantle. and	core. Discussion	includes the
	seismological model of the Eart	h (e.g. P- and S-v	wave velocity
	structures, elastic moduli, quality	factor, and densit	, ty); geotherm
	(Earth's heat) model with its	mathematical de	rivation; the
	mineralogical model and its tee	tonic implication;	and mantle
	convection models.		
Study and examination			
requirements and forms of	Midterm test		30%
examination	Final Test		40%
	Presentation, guizzes.	1	
	homework,	\checkmark	30%
	Laboratory work	-	-
	· ·		
Media employed	Whiteboard, laptop, slides, anima	tion, internet, and	computer
	programming		

Reading list	1. Block 2 Earth Structure and Block 4 Earth Dynamics, The
	Open University Press, Milton Keynes, 1981.
	2. Fowler, C.M.R., The Solid Earth: An Introduction to Global
	Geophysics, Cambridge University Press, Cambridge, 2nd
	3. Widiyantoro, S., 2004. Physics of the Earth's Interior,
	Departemen Geofisika dan Meteorologi, FIKTM, ITB,
	Bandung (in Indonesian).
	4. Wyllie, P.J., The Dynamic Earth, John Wiley & Sons Inc.,
	New York, 1971.

57. Earthquake and Fault Mechanism

Module designation	Earthquake and Fault Mechanism	
Module level	Bachelor	
Code, if applicable	TG4264	
Sub-heading, if applicable:	-	
Courses included in the	Farthquake and Fault Mechanism	
module, if applicable:		
Semester(s) in which module	Eighth Semester / Fourth Year	
is taught		
Module coordinator(s)	Dr. Wahyu Triyoso, M.Sc.	
Lecturer(s)	Dr. Wahyu Triyoso, M.Sc.	
Language	Banasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
hours	Class losturos	
nours		
	Lecturer teaches students in class. There will be pop	1
	quizzes, task, or homework in some classes. Lecturer	N
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	\checkmark
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	
	groups Lecturer checks how they calve the problem in	
	groups. Lecturer checks now they solve the problem in	
	Class project	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss	-
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly	_
	laboratory assistant tell main idea of practical or	
	experimental They do the practical afterwards	
	Field trip	
	rieiu u ip	
	visit field area or company which is related to course	-
	material.	

Workload			
	Class lectures		2 hours
	Tutorial session		-
	Supervision and consultation		-
	Practical or experimental lab	oratory work	-
	Individual studies		4 hours
	Total workload per week		6 hours
	Presentation		-
	Class project		-
	Field Trip		-
	Total workload per semester	-	96 hours
Credit points	2		
Requirements prerequisites	1. TG3120 Seismology.	_	
	2. TG3132 Earth Crust Mech	anics.	
Recommended prerequisites	-		
Learning Goals			
Knowledge	Skill	Со	mpetence
Understanding the mechar	ic • Able to make simple	Possess	the ability make a
earthquake and faulting.	parameter active fau	lt. deforma	ation model of
Understanding basic conce	• Able to make simple	active fa	ult movement
of elastic deformation, stre	ess, model of deformatio	n, during p	re-and co-seismic.
strain.	strain, and stress.	Possess the ability to do a	
Understanding basic conce	• Able to model pre-an	d simple d	lislocation model
of seismic moment.	co-seismic slip.	to estim	ate stress, strain,
Onderstanding basic conce of dislocation modeling	pt	and sets	mic moment.
Content	Earthquake and Fault Mechar	ics is addressed	to understand the
	mechanics of the earthquake	and faulting and	d its effect in static
	stress change.		
Study and examination	Midterm test		40%
requirements and forms of	Final Test		40%
examination	Attendance, quizzes,		20%
	homework	Y	20/0
	Laboratory work	-	-
Media employed	Slides, beamer, whiteboards,	appropriate sof	tware, online
	communication, internet, exe	rcises, etc.	
Reading list	1. Stein and M. Wysession, 2	2002, an introdu	iction to
	Seismology, Earthquakes	and Earth Struc	ture, Blackwell
	Publishing.		
	2. SCHOIZ, C. H. 1990, the Me	echanics and the	e Earthquake
	Faulting, Campriage and Christopher H. Schola, Th	Driiversity Press	, campinage. Forthquakes and
	3. Unristopher H. Scholz, The Mechanics of Earthquakes an Equiling Cambridge University Proce. May 2, 2002. Scie		
	471 nages		
	4. Mattew, J. H. and Fink. K.	D, 1992, Nume	rical Methods Using
	Matlab, 3rd Ed, Prentice I	Hall.	5

58. Seismic Inversion for Reservoir

Module designation	Reservoir Seismic Inversion	
Module level	Bachelor	
Code, if applicable	TG4264	
Sub-heading, if applicable:		
Courses included in the	Reservoir Seismic Inversion	
module, if applicable:		
Semester(s) in which module is taught	Eighth Semester / Fourth Year	
Module coordinator(s)	Ignatius Sonny Winardhie, Ph.D.	
Lecturer(s)	Ignatius Sonny Winardhie, Ph.D., Ekkal Dinanto, S.T., M.T.	,
	Prof.Dr.Ir. Sigit Sukmono, M.Sc., Dona Sita Ambarsari, ST,	MT
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class	
	using slide in LCD projector, followed by discussion	_
	session. After presentation, they make report what	
	they present before.	
	Tutorial session	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	2
	groups Lecturer checks how they solve the problem in	v
	turns	
	Class project	
	Class project	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	-
	consults problem which they face and discuss	
	together how to solve the problem.	
	Practical or experimental laboratory work	
	Students do practical or experimental in the	
	laboratory according to practical module. Firstly,	-
	laboratory assistant tell main idea of practical or	
	experimental. They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	
	material.	-

Workload				
	Class I	ectures		3 hours
Tutoria		ial session		3 hours
	Supervision and consultation		-	
	Practical or experimental laboratory work			-
	Individ	dual studies		3 hours
	Total	workload per week		9 hours
	Presei	ntation		-
	Class	project		-
	Field 1	Ггір		-
	Total	workload per semester		144 hours
Credit points	3			
Requirements prerequisites	TG4162	2 Interpretation of Seismic Refl	ection.	
Recommended prerequisites	-			
Learning Goals				
Knowledge		Skill	Compe	tence
Understanding relationsh	ip	Able to given the log	Possess fill	nd the most
between rock-physics		data, able to find the	sensitive i	impedance
parameters (such as poro	sity	reservoirs and the	paramete	rs for
and water-saturation) and	d V _p , V _s ,	most sensitive	character	izing the
Density.	ont of	impedance	Possoss cl	hooso the
Onderstanding basic conc band limited solemic sign:		describe these	 Possess ci bost soisn 	nouse the
wavelet reflection coeffic	ai, siont	reservoirs	methodol	ogies which
convolution theorem seis	mic	• Able to given the log	will band	a the
amplitude responses and		 Able to given the log and seismic data able 	reservoir	ethe
seismic resolution in relat	ion to	to do well-to-seismic	character	ization tasks
nrevious point		tie and to do the	annronria	tely
 Understanding basic conc 	ent of	seismic interpretation	 Possess d 	eliver and
inversion methodology ar	oplied	appropriately	interpret	the seismic
to seismic data.	phea	 Able to given point 1 	inversion	results in
 Understanding how to an 	alvze	and point 2 ready.	terms of r	eservoir
post-stack and pre-stack s	seismic	able to choose.	propertie	s.
data as a response of imp	edance	perform and deliver	p p	
contrast.		the most appropriate		
Understanding a number of		seismic inversion.		
seismic inversion methodologies		Able to given point 3		
along with their limitations and		ready, able to		
advantages.		interpret them in		
Understanding how to interpret		terms of reservoir		
seismic inversion results and		properties.		
pitfalls.				
Content	Mather	matical foundation and geolog	gical applicatio	n of complex
	attributes, amplitude attributes, time attributes. Time lap			. Time lapse
	seismic			

Study and examination				
requirements and forms of	Midterm test		30%	
examination	Final Test		40%	
	Attendance, quizzes, $$ homework		30%	
	Laboratory work	-	-	
Media employed	Slides, beamer, whiteboards, appropriate software, online			
	communication, internet, exercises, etc.			
Reading list	1. Sukmono, S., Post and Prestack Seismik Inversion for			
	Hydrocarbon Reservoir Characterization, Diktat Kuliah ITB,			
	2007.			
	2. Russel, B.M., 1995, I	Introduction to	o Seismic Inversion	
	Method, SEG.			

59. Seismic Attributes for Reservoir

Module designation	Seismic Attributes for Reservoir Characterization		
Module level	Bachelor		
Code, if applicable	TG4265		
Sub-heading, if applicable:			
Courses included in the	Seismic Attributes for Reservoir Characterization		
module, if applicable:			
Semester(s) in which module	Eighth Semester / Fourth Year		
is taught			
Module coordinator(s)	Dr. Fatkhan		
Lecturer(s)	Dr. Fatkhan		
Language	Bahasa Indonesia		
Relation to curriculum	Elective Subject / Elective Course		
Type of teaching, contact			
nours	Class lectures		
	Lecturer teaches students in class. There will be pop		
	quizzes, task, or homework in some classes. Lecturer	\checkmark	
	presents course material using media such as slide in		
	LCD projector and whiteboard.		
	Presentation		
	Students present course materials in front of class		
	using slide in LCD projector, followed by discussion		
	session After presentation they make report what		
	they present before		
	Tutorial sossian		
	Lecturer gives students some problem beforenand. In	1	
	class students explain how to solve the problem in	N	
	groups. Lecturer checks how they solve the problem in		
	turns.		
	Class project		
	Lecturer gives students a project which related to	\checkmark	
	current issues and course material.		
	Supervision and consultation		
	This activity is continuation of class project. Students		
	consults problem which they face and discuss	-	
	together how to solve the problem		
	Practical or ovnerimental laboratory work		
	Studente de experimental laboratory work		
	Students do practical or experimental in the	-	
	laboratory according to practical module. Firstly,		
	laboratory assistant tells main idea of practical or		
	experimental. They do the practical afterwards.		
	Field trip		
	Visit field area or company which is related to course	-	
	material.		

Workload					
	Class lectures			2 hours	
	Tutorial session			-	
	Supervision and consultation			-	
	Pra	Practical or experimental laboratory work			-
	Ind	ividual studies		•	4 hours
	Tot	al workload per week			6 hours
	Pre	sentation			3 hours
	Cla	ss project			10 hours
	Fie	Id Trip			-
	Tot	al workload per semester			84 hours
		•			
Credit points	2				
Requirement prerequisites	TG42	162 Interpretation of Seis	mic Re	flection.	
Recommended prerequisites	-				
Learning Goals					
Knowledge		Skill		C	Competence
Understanding analyze and		Able to solve problem	าร	Possess solve problems	
enhance or quantify featur	es	related to seismic		related to seismic	
of interpretation.		attributes that are attribute c		oute challenges	
Understanding infer some		derived from seismic			
geologic features or reserve	oır	data.			
property of Interest.		Able to solve problems			
Onderstanding quantity amplitude and marphologic	cal	related to seismic			
footuros using dotorministi	cal	nterpretation by using			
calculations etc	L	attributes	SIIIC		
 Understanding discusses it 	s	attributes.			
applicability and assumptio	ons.				
	-				
Content	Mat	hematical foundation and	d geol	ogical ap	plication of complex
	attri	butes, amplitude attribute	es, and	d time att	ributes
Study and examination		•			
requirements and forms of	Midterm test			\checkmark	30%
examination	Final Test				40%
	Attendance, quizzes,		2	30%	
	homework, presentations		5070		
	Laboratory work -		-		

Media employed	Whiteboard, and software computer
Reading list	 Alistair R Brown, Interpretation of three-dimensional seismic data, AAPG Memoir 42.
	2. Chopra, S., and Kurt J Marfurt, Seismic attributes for prospect identification and reservoir characterization, Geophysical Development No.11.
	 Sukmono, S., 2007, Seismic Attribute for Hydrocarbon Reservoir Characterization, Diktat Kuliah ITB, 2007.

60. Introduction to Seismic Stratigraphy

Module designation	Principle Stratigraphy	
Module level	Bachelor	
Code, if applicable	GL 4168	
Sub-heading, if applicable:		
Courses included in the	Principle Stratigraphy	
module, if applicable:		
Semester(s) in which module	Fourth Semester / Second Year	
is taught		
Module coordinator(s)	Dr. Khoiril Anwar Maryunani	
Lecturer(s)	Dr. Khoiril Anwar Maryunani	
Language	Bahasa Indonesia	
Relation to curriculum	Elective Subject / Elective Course	
Type of teaching, contact		
hours	Class lectures	
	Lecturer teaches students in class. There will be pop	
	quizzes, task, or homework in some classes. Lecturer	\checkmark
	presents course material using media such as slide in	
	LCD projector and whiteboard.	
	Presentation	
	Students present course materials in front of class using	
	slide in LCD projector, followed by discussion session	_
	After presentation, they make report what they present	
	hoforo	
	Tutorial accesion	
	Lecturer gives students some problem beforehand. In	
	class students explain how to solve the problem in	-
	groups. Lecturer checks how they solve the problem in	
	turns.	
	Class project and discussion	
	Lecturer gives students a project which related to	-
	current issues and course material.	
	Supervision and consultation	
	This activity is continuation of class project. Students	
	consults problem which they face and discuss together	-
	how to solve the problem	
	Practical or experimental laboratory work	
	Students do practical or experimental in the laboratory	
	according to practical module. Firstly, laboratory	-
	assistant tell main idea of practical or experimental.	
	They do the practical afterwards.	
	Field trip	
	Visit field area or company which is related to course	-
	material.	
		1

Class lectures 2 hours Tutorial session - Supervision and consultation - Practical or experimental laboratory work - Individual studies 4 hours Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals 6 Able to make • Understanding the concept of strata of rock, how it occupy in space, • • Understanding the concept of strata of rock, how it occupy in space, • Possess an extensive knowledge of interpretation of fault and facies changes from a borehole or vertical measurement. • Understanding several techniques related to Biostratigraphy and Chronostratigraphy. • Midtern test v Possesis stratigrafi and reconstruction. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. Ithostratigraphy correlation. Study and examination requirements and forms of examination V 45% Final Test v 35% Presentation, qu	Workload			
Tutorial session - Supervision and consultation - Practical or experimental laboratory work - Individual studies 4 hours Total workload per week 6 hours Presentation - Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals 5kill Concept of strata of rock, how it occupy in space, space, occupt of stratigraphy nomenclature, and its meaning among the geology discipline • Understanding several techniques related to Biostratigraphy and Chronostratigraphy correlation. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. Study and examination requirements and forms of examination Widterm test Vidterm test V 45% Final Test V 20%		Class lectures	2 hours	
Supervision and consultation - Practical or experimental laboratory work - Individual studies 4 hours Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals • Modestanding the concept of strata of rock, how it occupy in space, • • Understanding the concept of stratigraphy unit. • • Able to make correlation of stratigraphy unit. • • • Able to make correlation of stratigraphy unit. • • • Able to make correlation of stratigraphy unit. • • • Able to make correlation of stratigraphy unit. • • • • Able to make correlation of fault and facies changes from a borehole or vertical measurement. • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. • Ithostratigraphy and Chronostratigraphy and Chronostratigraphy and chronostratigraphy. Correlation and Historical geology. The conomic aspect of stratigraphy correlation. Study and examination requirements and forms of examination<		Tutorial session	-	
Practical or experimental laboratory work - Individual studies 4 hours Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals GL2151 Sedimentology Learning Goals • Moderstanding the concept of strat of rock, how it occupy in space, • • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • • Understanding several techniques related to Biostratigraphy. lithostratigraphy. lithostratigraphy. The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. tithostratigraphy. omenclature (indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test \vdot 45% Final Test		Supervision and consultation	-	
Individual studies 4 hours Total workload per week 6 hours Presentation - Class project - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals • • Understanding the concept of strata of rock, how it occupy in space, • • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Able to make correlation of stratigraphy unit. • • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy, lithostratigraphy and Chronostratigraphy. The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. Study and examination requirements and forms of examination Midterm test √ 45% Final Test Final Test √ 35% Presentation, quizzes, homework √ 20%		Practical or experimental labo	oratory work	-
Total workload per week 6 hours Presentation - Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals • Moderstanding the concept of strata of rock, how it occupy in space, • • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • • Understanding several techniques related to Biostratigraphy, and Chronostratigraphy. The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy, connenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test \u2014 45\% Final Test \u2014 25\% Presentation, quizzes, homework \u2014 20\%		Individual studies		4 hours
Presentation - Class project - Field trip - Total workload per semester 96 hours 2 Requirements prerequisites GL2151 Sedimentology		Total workload per week		6 hours
Class project - Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals GL2151 Sedimentology Understanding the concept of strata of rock, how it occupy in space, Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy, nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, hom work $\sqrt{20\%}$		Presentation		-
Field trip - Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals GL2151 Sedimentology Learning Goals - Mowledge Skill Competence - Ouderstanding the concept of strata of rock, how it occupy in space, - Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline - Understanding several techniques related to Biostratigraphy and Chronostratigraphy and Chronostratigraphy. The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy and Chronostratigraphy. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, homework 20%		Class project		-
Total workload per semester 96 hours Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals Guident State of Guident Strate of rock, how it occupy in space, etc., how it occupy in space, etc., and facility of stratigraphy unit. • Able to make correlation of stratigraphy unit. • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Able to make correlation of stratigraphy, not concept of stratigraphy, and Chronostratigraphy and Chronostratigraphy and Chronostratigraphy and Chronostratigraphy and chronostratigraphy and factor of stratigraphy correlation. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. It hostratigraphy correlation. Study and examination requirements and forms of examination Midterm test value values, v		Field trip		-
Credit points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals Understanding the concept of strata of rock, how it occupy in space, Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy and Chronostratigraphy. The sedimentary rock occupy in space. Basic stratigraphy; stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy and Chronostratigraphy. The sedimentary rock occupy in space. Basic stratigraphy; stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy and Chronostratigraphy and Chronostratigraphy and The set via 35% Study and examination requirements and forms of examination Midterm test V 35% Presentation, quizzes, via 20% Laboratory work Viabaroy work Viabaroy work Viabaroy work Viabaroy work Viabaroy work Viabaroy work 		Total workload per semester		96 hours
Content points 2 Requirements prerequisites GL2151 Sedimentology Learning Goals Knowledge • Understanding the concept of strata of rock, how it occupy in space, • Able to make correlation of stratigraphy unit. • • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Able to make correlation of stratigraphy, lithostratigraphy, lithostratigraphy and Chronostratigraphy. • • Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and chronostratigraphy; stratigraphy nomendature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy; stratigraphy nomendature (Indonesian). Content Midterm test $$ 45% Final Test $$ 9 Presentation, quizzes, homework $$ 20% Laboratory work -	Cradit points	3		L
Interpretation of procession of strata of concept of strata of rock, how it occupy in space, Able to make correlation of stratigraphy unit. Possess an extensive knowledge of interpretation of fault and facies changes from a borehole or vertical measurement. • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Understanding several techniques related to Biostratigraphy. • The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Presentation, quizzes, homework $\sqrt{20\%}$	Requirements prerequisites	CI 2151 Sedimentology		
Knowledge Skill Competence • Understanding the concept of strata of rock, how it occupy in space, • Able to make correlation of stratigraphy unit. • Possess an extensive knowledge of interpretation of fault and facies changes from a borehole or vertical measurement. • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Understanding several techniques related to Biostratigraphy. • The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. Ithostratigrafi, biostratigraphy, and Chronostratigraphy; stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $$ 45% Final Test $$ 35% Presentation, quizzes, homework $$ 20%	Learning Goals	GL2151 Sedimentology		
KnowledgeSkillCompetence•Understanding the concept of strata of rock, how it occupy in space,•Able to make correlation of stratigraphy unit.•Possess an extensive knowledge of interpretation of fault and facies changes from a borehole or vertical measurement.•Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline••Possess an extensive knowledge of interpretation of fault and facies changes from a borehole or vertical measurement.•Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy.••ContentThe sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, onmenclature (Indonesian). correlation and Historical geology. The economic aspect of stratigraphy correlation.Study and examination requirements and forms of examinationMidterm test $$ 45% Final TestPresentation, quizzes, homework $$ 20%				
• Understanding the concept of strata of rock, how it occupy in space, • Able to make correlation of stratigraphy unit. • Possess an extensive knowledge of interpretation of fault and facies changes from a borehole or vertical measurement. • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. • The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy onenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Presentation, quizzes, homework $\sqrt{20\%}$ Laboratory work - -	Knowledge	Skill	Comr	petence
concept of strata of rock, how it occupy in space, it or correlation of stratigraphy unit. it now it occupy in space, • Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline it of stratigraphy, not concept of stratigraphy, not concept of stratigraphy, not concept of stratigraphy, lithostratigraphy, not concept and chromostratigraphy, lithostratigraphy, not concept and chromostratigraphy, nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, homework $\sqrt{20\%}$	Understanding the	Able to make	Possess a	an extensive
Content of stratigraphy nomenclature, and its meaning among the geology disciplineStratigraphy unit.Interpretation of fault and facies changes from a borehole or vertical measurement.•Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy.•Interpretation of fault and facies changes from a borehole or vertical measurement.ContentThe sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy, nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation.Study and examination requirements and forms of examinationMidterm test $$ 45% Final Test $$ 20% Laboratory work	concept of strata of	correlation of	knowledg	ge of
space, Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • and facies changes from a borehole or vertical measurement. • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. • and facies changes from a borehole or vertical measurement. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy, stratigraphy onenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, homework $\sqrt{20\%}$ Laboratory work -	rock how it occupy in	stratigraphy unit	interpret	ration of fault
• Understanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Understanding several techniques related to Biostratigraphy, lithostratigraphy, and Chronostratigraphy. • In the sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy, stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, homework $\sqrt{20\%}$ Laboratory work $-$	snace		and facie	es changes from
• Orderstanding the concept of stratigraphy nomenclature, and its meaning among the geology discipline • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. • Winderstanding several techniques related to Biostratigraphy. • Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, homework $\sqrt{20\%}$ Laboratory work -	 Understanding the 		a horeho	le or vertical
Concept of stratigraphy nomenclature, and its meaning among the geology discipline Interstutent. • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. Interstutent. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy, stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test Midterm test $\sqrt{35\%}$ Presentation, quizzes, homework $\sqrt{20\%}$	concept of stratigraphy		measure	ment
Information and its meaning among the geology discipline Image: meaning among the geology discipline • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. Image: meaning among the geology discipline Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $\sqrt{45\%}$ Final Test $\sqrt{35\%}$ Presentation, quizzes, homework $\sqrt{20\%}$	nomenclature and its		medsure	inche.
Interaining antoing the geology discipline • Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy and Chronostratigraphy. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigrafi, biostratigraphy, and Chronostratigraphy; stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test $$ 45% Final Test $$ 35% Presentation, quizzes, homework $$ 20% Laboratory work - - - -	moning among the			
e Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigraphy, and Chronostratigraphy; stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test √ 45% Final Test √ 35% Presentation, quizzes, homework √ 20%				
• Understanding several techniques related to Biostratigraphy, lithostratigraphy and Chronostratigraphy. Ithostratigraphy and Chronostratigraphy. Content The sedimentary rock occupy in space. Basic stratigrafi and reconstruction. lithostratigrafi, biostratigraphy, and Chronostratigraphy; stratigraphy nomenclature (Indonesian). Correlation and Historical geology. The economic aspect of stratigraphy correlation. Study and examination requirements and forms of examination Midterm test √ 45% Final Test √ 35% Presentation, quizzes, homework √ 20% Laboratory work - - - -	geology discipline			
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Reading list 1. Dunbar C.O and Rodgers L (157) Principal of Stratigraphy	Reading list	1. Dunbar C.O and Rodge	rs. J (157) Princip	oal of Stratigraphy
2 Schoch R M (1989) Stratigranhy: Principal of Schulghuphy		2 Schoch R M (1989) St	tratigranhy. Princ	rinal and Methods
3 Martodioio S dan Diubaani (1996) Sandi Stratigrafi		3 Martodioio S dan Diuhaeni (1996) Sandi Stratigrafi		

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