	SEMESTER LEARNING PLAN **DEPARTMENT OF GEOMATICS ENGINEERING** **FACULTY OF CIVIL, PLANNING, and GEO ENGINEERING**			
PROGRAM	**UNDERGRADUATE**			
COURSE NAME	**Physical Oceanograhy**		**CODE**	**RM184410**
SEMESTER	**IV (four)**		**CREDITS**	**3 (three)**
LECTURERS	**Danar Guruh Pratono S.T, M.T, Ph.D**			
COURSE MATERIALS	1	Definitions, concepts, theories, history and application of oceanography especially physical osmography		
	2	Temperature, salinity, density, conductivity, pressure and depth of the sea		
	3	Atmospheric effects on the ocean		
	4	Winds, waves, currents, circulation in the deep sea		
	5	Tides and seawater processes		
	6	Ocean heat balance and impact		
EXPECTED LEARNING OUTCOMES THAT IMPOSED IN THE COURSE	A	Able to apply mathematics, science, and engineering in the fields of geodesy, surveying, hydrography, remote sensing, photogrammetry, geographic information systems, and cadastral to gain a thorough. understanding of the principles of engineering		
	F	Able to compile scientific reports and provide solutions based on leadership, creativity and communication skills as well as being responsible for the work done.		
COURSE LEARNING OUTCOMES	1	Students are able to understand definitions, concepts, theories, history and applications of oceanography, especially physical oceanography		
	2	Students are able to know the relationship between temperature, density, salinity, conductivity, pressure and depth of the sea		
	3	Students are able to understand the relationship between the influence of the atmosphere with the ocean		
	4	Students are able to understand the heat balance that occurs in the ocean		
	5	Students are able to understand the concepts and relationships between wind, currents, waves and circulation in the deep sea		
	6	Students are able to understand the concept of high tide and its impact on the beach process		
ABILITY CATEGORIES	*Cognitive Prosecess*	*Analyse*		
	Knowledge Domain	*Procedural*		
	Psychomotor	*Conscious control*		
	Affective	*Change of attitude*		

Class	Lesson learning outcome	Criteria dan Assessment Indicator	Weight	Learning Materials	Learning Experience	Learning Methods	Estimated Time
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Students are able to explain theories, definitions, concepts, history and applications of oceanography and physical oceanography	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	5	Introduction to physical oceanography and oceanography; Historical oceanography and physical oceanography; Applications of physical oceanography in the field of geomatics	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 2 x 50' Exercise : 1 x 50 Assignment : 3 x 50'
2 - 3	Students are able to explain the effect of the atmosphere on the ocean	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	15	Earth in planet system; Coriolis force; Wind system; Wind measurement and scale; Wind tension	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 4 x 50' Exercise : 2 x 50 Assignment : 6 x 50'
4 - 5	Students are able to understand the hot balance in the ocean	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	15	Definition of heat balance in the ocean; Calculation of hot flux; Geographical distribution of fluxes	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 4 x 50' Exercise : 2 x 50 Assignment : 6 x 50'

6 -7	Students are able to explain the relationship between temperature, density, salinity, conductivity and pressure with the depth of the sea	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	15	Salinity;Density; Temperature; Conductivity; Pressure; Ocean Depth	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 4 x 50' Exercise : 2 x 50 Assignment : 6 x 50'
8	Evaluasi Tengah Semester						
9	Students are able to understand the ocean's response to the wind	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10	Ekman Layer; Inertia force at sea level; Ekman mass transport; Ekman Theory and its applications	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 2 x 50' Exercise : 1x 50 Assignment : 3 x 50'
10 - 12	Students are able to understand circulation in the ocean	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	15	Hydrostatic balance; Geostropic equation; Geostropic currents; Flow measurement; Lagrange and Euler svedrup theory; The Munk solution; Surface circulation and deep sea	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 4 x 50' Exercise : 2x 50 Assignment : 6 x 50'
13 - 14	Students are able to understand the theories, concepts and types of waves	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	15	Linear Wave Theory; Non Linear Wave Theory; Wave Spectrum; Forecasting of waves; Wave observation	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 4 x 50' Exercise : 2x 50 Assignment : 6 x 50'
15	Students are able to understand the tides and the formation of the beach	Material completeness, depth of explanation, effectiveness of communication, accuracy of attitude	10	Theory of Tides; Tide Applications; Tides Prediction; Coastal Processes	Lecture Presentation Discussion	Teacher centered learning Student centered learning Problem based learning	Class : 2 x 50' Exercise : 1 x 50 Assignment : 3 x 50'
						TOTAL	100