



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

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

Undergraduate Programme In Physics

Module Handbook

Module Name :	<i>Geofisika Fluida</i> Geophysical Fluids
Module level :	Bachelor degree/Undergraduate Programme
Course Code :	4520102254
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	7/Fourth Year
Module coordinator(s)	Prof. Tjipto prastowo, Ph.D
Lecturer(s):	Prof. Tjipto prastowo, Ph.D
Language:	<i>Bahasa Indonesia</i> (Indonesian Language)
Classification within the curriculum:	Compulsory / Elective
Teaching format/class hours per week during the semester:	2 contact hours of lectures (sks or credit unit*)
Workload :	Lecture: 2 x 50 minutes lectures, 2 x 60 minutes structured activity, 2 x 60 minutes individual activity, 14 weeks per semester. 79.33 total hours per semester ~ 3.18 ECTS **
Credit Point:	2 sks (3.18 ECTS)
Requirements:	Earth Physics Mathematical Physics I Mathematical Physics II
Learning goals/competencies:	1. Demonstrating independent, creative and honest characters in doing student assignments, mid and final exams. 2. Understanding the concepts of scales of motions and naturally occurring, large-scale fluid flows. 3. Understanding the effects of rotation on the large-scale fluid flows. 4. Understanding the effects of stratification on the large-scale fluid flows. 5. Understanding the differences between the atmosphere and oceans in terms of their dynamics.
Content	Geophysical Fluid Dynamics (GFD) examines naturally occurring, large-scale flows on Earth and elsewhere, but mostly on Earth. This course generally encompasses the motions of both fluid phases: liquids (for example, waters in the oceans, molten rocks in the outer core) and gases (for example, air in the atmosphere,



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	ionised gases or plasma at the surface of stars). In this respect, GFD comprises the large-scale motions of rotating-stratified fluid dynamics. The topics includes discussions on the physics principles of atmosphere and ocean dynamics, focusing upon the governing equations of fluid motion under consideration.										
Attribute Soft skill:	Scientific report, public speaking, and team work										
Study/exam achievements:	Students are considered to complete the course and pass if they obtain at least 40% of maximum final grade. The final grade (NA) is calculated based on the following ratio: <table border="1"> <thead> <tr> <th>Assessment Components</th><th>Percentage of contribution</th></tr> </thead> <tbody> <tr> <td>Participation</td><td>20%</td></tr> <tr> <td>Assignment</td><td>30%</td></tr> <tr> <td>Mid-semester test</td><td>20%</td></tr> <tr> <td>Final semester test</td><td>30%</td></tr> </tbody> </table>	Assessment Components	Percentage of contribution	Participation	20%	Assignment	30%	Mid-semester test	20%	Final semester test	30%
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Participation	20%										
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Learning Methods :	Student-centered approach, lecture and discussion, and presentations (structured activities)										
Form of Media:	<i>Power Point</i> slides, e-book file, and multimedia.										
Literature (primary references):	1. Cushman-Roisin, B. and Beckers, J-M. 2009. Introduction to Geophysical Fluid Dynamics. New Hampshire, US: Academic Press, pp. 1-759. 2. Wirth, A. 2015. A Guided Tour through Buoyancy-Driven Flows and Mixing. LEGI Grenoble, France: HAL archive-ouvertes.fr, pp. 1-70.										
Notes:	*1 credit unit or <i>sks</i> in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018. **1 credit unit or <i>sks</i> = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019										