

MODUL HYDROCLIMATOLOGY



MASTER PROGRAM OF ENVIRONMENTAL SCIENCE
SCHOOL OF POSTGRADUATE STUDIES
DIPONEGORO UNIVERSITY

A Module Descriptions :

Module design	Hydroclimatology
Module level, if applicable	
Code, if applicable	P-CIL-8-215
Subtitles, if applicable	
Courses, if applicable	
Semester(s) in which the module is taught	2 nd Semester
Person responsible for the module	
Lecturer	1. Prof. Dr. Ir. Sutrisno Anggoro, MS 2. Dr. Muhammad Helmi, SSi, MSi 3. Ferry Hermawan, ST., MT., PhD.
Language	<i>Indonesian and English</i>
Relations to curriculum	
Type of teaching, contact hours	<i>Lecture: 120 minutes Q&A: 20 minutes Discussion: 20 minutes Presentation: 20 minutes Individual Assignment: 36 minutes</i>
Workload	<i>(Estimated) workload, divided into contact hours (lecture, exercise, laboratory session, etc.) and private study, including examination preparation, specified in hours,¹ and in total.</i>
Credit points	2 credits / 4 ECTS
Requirements according to the examination regulations	<i>Minimum attendance of lectures 75%</i>
Recommended prerequisites	<i>eg existing competences in...</i>

Module objectives/intended learning outcomes	Students are able to describe the underlying relationship between climate variability and water resources; describe and explain natural hydroclimatological variability at various spatial scales; explain the methods used to reconstruct the record of past hydroclimatological changes; explain basic concepts and methods used in both
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	climate science and hydrology; demonstrate knowledge of cutting-edge technology and instrumentation including weather radar and satellites for real-time measurement of meteorological and climate parameters; demonstrate an understanding of the causes and effects of atmospheric and oceanic circulation; discuss the interaction between ocean circulation/atmosphere and hydrological processes such as precipitation, evaporation, interception, soil moisture, snow, river flow, etc.; explain climate change and climate variability; demonstrate an understanding of climate indicators, hydroclimatic models and sources of global climate data; and discuss 'contemporary' challenges in hydroclimatology due to the increasing human impact on processes in the hydrological cycle
Content	This course provides students with a thorough background of the basic processes that govern the climate and hydrological systems, and the relationships between them. It first examines fundamental atmospheric and hydrological processes, and traces the flow of energy and water between the Earth's surface and the atmosphere. Then the physical processes that control the water cycle are examined, including evapotranspiration, precipitation, runoff and water storage in natural reservoirs (including soil and groundwater, lakes and wetlands). Finally, students will learn about the role of water in climate in Earth's major biomes.
Study and examination requirements and forms of examination	• <i>Open book and close book</i> • <i>Multiple choice, case study, interview, practice</i>
Media employed	<i>Powerpoint, youtube, website</i>
Reading list	1. Dahuri, R., Jacub Rais, Sapta Putra Ginting, dan M.J. Sitepu. 2001. Pengelolaan Sumberdaya Wilayah Pesisir dan Lautan secara Terpadu. PT Pradnya Paramita, Jakarta 2. Limantara Lily.2018. Hydrological Engineering. Publisher ANDI. Yogyakarta 3. Syarifudin.2017.Applied Hydrology. Publisher ANDI. Yogyakarta 4. Tjasyono Bayong.2008. Applied Climatology. ITB Press. Bandung