

MODUL HYDROCLAMATOLOGY



MASTER PROGRAM OF ENVIRONMENTAL SCIENCE
SCHOOL OF POSTGRADUATED STUDIES
DIPONEGORO UNIVERSITY

Modul Description :

Modul design	Hydroclimatology
Modul level, if applicable	
Code, if applicable	P-CIL-8-215
Subtitles, if any	
Course, if applicable	
Semester(s) in which the Modul is taught	Semester 2
Modul responsible*	
Teaching Lecturer	1. Dr. Ir. Sutrisno Anggoro, MS 2. Dr. Muhammad Helmi, SSi, MSi 3. Ferry Hermawan, ST., MT., PhD.
Language	<i>Indonesian and English</i>
Relationship with curriculum	
Type of teaching, hours of contact	<i>Studying: 1 x 120 minutes x 16 meetings = 32 hours/week Q&A: 1x 20 minutes 16 meetings = 5.3 hours/week Discussion: 1x 20 minutes 16 meetings = 5.3 hours/week Presentation: 1x 20 minutes 16 meetings = 5.3 hours/week Individual assignments: 36 minutes/day = 3 hours/week Total work for 1 semester = 100 hours = 4 ECTS</i>
Workload	<i>(Estimated) workload, divided into contact hours (lectures, exercises, laboratory sessions, etc.) and personal study, including test preparation, specified in hours,¹ and overall.</i>
credit points	<i>2 credits / 4 ECTS</i>
Requirements according to the exam regulations	<i>Lecture attendance of at least 75%</i>
Recommended prerequisites	<i>For example, competence in...</i>

<p>Modulthe desired learning objectives/outcomes</p>	<p>Students are able to explain the relationship that underlies climate variability and water resources; describe and explain natural hydroclimatological variability at various spatial scales; describes the methods used to reconstruct records of past hydroclimatological changes; explain the basic concepts and methods used in both climate science and hydrology; demonstrate knowledge of state-of-the-art 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; discusses 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 global climate data sources; and discusses 'contemporary' challenges in hydroclimatology due to the increasing human impact on processes in the hydrologic cycle</p>
<p>Fill</p>	<p>This course provides students with a thorough background of the basic processes that govern the climatic 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 storage of water 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.</p>
<p>Study and exam requirements and forms</p>	<ul style="list-style-type: none"> • <i>Open the book and close the book</i> • <i>Multiple choice, case studies, interviews, practicals</i>
<p>Media used</p>	<p><i>Powerpoint, youtube, website</i></p>
<p>Reference</p>	<ol style="list-style-type: none"> 1. Dahuri, R., Jacub Rais, Sapta Putra Ginting, and MJ Sitepu. 2001. Integrated Management of Coastal and Marine Resources. PT Pradnya Paramita, Jakarta 2. Limantara Lily. 2018. Hydrological Engineering. ANDI Publisher. Yogyakarta 3. Syarifudin. 2017. Applied Hydrology. ANDI Publisher. Yogyakarta 4. Tjasyono Bayong. 2008. Applied Climatology. ITB Press. Bandung