

Module designation	Advanced hydrology discusses the philosophy of the hydrological cycle; The main processes-roses in hydrology (precipitation, evaporation, evapotranspiration, infiltration, percolation, interception, water storage. Geographic landscape approach (4 zones); World & Indonesia rain distribution. Rain processes (orographic, convective, frontal), rain distribution (spatial and temporal. Rain data measurement and rain data collection; rain extraction (principle of sizing and reporting), extraction of rain from RC data, rain extraction from models (e.g. CHRS); rain from RADAR. Infiltration process, pF curve, soil infiltration rate vs soil texture; Runoff and runoff calculations (CN, rational, SCS, UH, UH intetics). Rainfall-runoff model. Conservation of water resources.						
Semester(s) in which the module is taught	Odd/Even						
Person responsible for the module	Prof. Dr. Sudarmadji, M.Eng.Sc. Dr. Mohammad Pramono Hadi, M.Sc.						
Language	Indonesian						
Relation to curriculum	Elective						
Teaching methods	SCL: Team-based Project/Case-based Learning/PBL						
Workload (incl. contact hours, self-study hours)	CLO1	Interactive lectures		3 meetings (6 x 50 minutes)			
	CLO2	Interactive lectures (along with case discussions)		6 meetings (12 x 50 minutes)			
	CLO3	Interactive lectures (along with case discussions)		5 meetings (10 x 50 minutes)			
Credit points	Assessment Techniques	Percentage of Assessment t	Criteria/ Indicators		CLO		
					3	4	5
	Participatory Activities	20%	Presentation contributions Presentation rubric		5%	5%	10%
	Project Results/ Case Study Results/ PBL Results	30%	Problem analysis PBL assessment rubric		5%	10 %	15%
	Cognitive						
	Assignment	20%	Heading penilaian		5%	5%	10%
	Quiz						
Midterm Exam		Answer key					

	Final Exam	30	Answer key	5%	15%	10%
	Total	100%				
Required and recommended prerequisites for joining the module	None					
Module objectives/intended learning outcomes	ELO2	Supporting Competence I (knowledge and <i>understanding</i> of) is being able to understand, synthesis, and or evaluate the development of concepts, theories and applications of geography for the benefit of development.				
	ELO4	Supporting Competence III (practical skill-able to) is being able to develop, modify, and synthesis geographic analysis methods to solve problems in the real world, whether spatial, ecological, or regionally complex.				
	CLO1	Understand the basic concepts of hydrological science [ELO2]				
	CLO2	Understand and develop solutions to problems in the scope of hydrology including the availability of water on earth [ELO4]				
	CLO3	Understand and be able to operate modeling applications for the analysis of hydrological phenomena that occur [ELO4]				
Content	CLO1	1. Basic Concepts of Hydrology 2. Hydrological Cycle				
	CLO2	1. Availability of spatial and temporal water. 2. Water availability compared to water requirements 3. Floods and Droughts				
	CLO3	1. Rain analysis (Sukat, RS, and Radar), Rain Spread Interpolation 2. Rainfall-runoff process 3. Hydrology model, HEC-HMS, HEC-RAS				
Examination forms	Midterm Exam and Final Exam					
Study and Examination Requirements						
Reading list	1.					