Module Name	Hydrometeorology
Module level, if applicable	
Code, if applicable	GEL 2203
Semester(s) in which the module	Third (3rd) Semester
Person responsible for the module	Prof. Dr. H.A. Sudibyakto, M.S Dr. Emilya Nurjani, S.Si., M.Si
Lecturer	Prof. Dr. H.A. Sudibyakto, M.S Dr. Emilya Nurjani, S.Si., M.Si Utia Suarma, S.Si., M.Si
Language	Bahasa Indonesia
Relation to curriculum	For Geography and Enviromental Science students only, specialize hidrology and meteorology, and one of elective class to be taken. This class available for third semester or higher.
Type of teaching, contact hours	STAR *(Student Teacher Aesthetic Role-Sharing)* is an optimal combination between SCL *(Student Centered Learning)* and TCL *(Teacher Centered Learning)*. Lecture: 1400 minutes Mid Semester Examination: 100 minutes Final Semester Examination: 120 minutes
Workload	Lecturer, including homework and discussion = 14 meetings x 100 minutes each Mid Semester Examination: 100 minutes Final Semester Examination: 120 minutes Total workload = 1620 minutes
Credit points	2
Requirements according to the examination regulations	Must attend lecture for more than 70%
Recommended prerequisites	-
Module objectives/intended learning aoutcomes	1. After following the lecture topic **Introduction to Hydrometeorology**, students are able to: a. Explain the study object of hydrometeorology b. Explain the relation between hydrology and meteorology-climatology c. Explain energy-balance d. Explain the problems related to weather and climate 2. After following the lecture topic **Hydrometeorology: Data Source, Measurement, and Analysis**, students are able to: a. Explain some hydrometeorological tools and their functions b. Explain how to analyze temperature and humidity c. Explain how to analyze time of radiation d. Explain how to analyze rainfall intensity e. Explain how to analyze rainfall amount 3. After following the lecture topic **Evapotranspiration**, students are able to:

	a. Explain the concept of evapotranspiration and transpiration b. Explain the concept of evapotranspiration measurement in a region c. Explain the factors related to evapotranspiration d. Explain some methods to measure evapotransporation 4. After following the lecture topic **Rainfall-Station Network Design and Analysis of Intercorrelation among Rainfall- Stations**, students are able to: a. Explain the number of rainfall stations needed in a specific region b. Explain some factors related to the determination of the location for rainfall station c. Explain some methods to design rainfall station network 5. After following the lecture topic **Rainfall Analysis**, students are able to: a. Explain the concept of regional precipitation and factors related to the distribution of that phenomena b. Explain how to analyze the rainfall data concistency test c. Explain the concept of rainfall-trend d. Explain how to analyze rainfall intensity, duration, and frequency 6. After following the lecture topic **Water Balance**, students are able to: a. Explain the concept of water balance b. Explain the methods to calculate water balance c. Explain how to analyze water balance 7. After following the lecture topic **Principals of Water Balance Modelling based on Watershed**, students are able to: a. Explain the concept of water balance in a watershed b. Explain the methods to calculate water balance in a watershed c. Explain how to analyze hydrograph 8. After following the lecture topic **Hydrometeorological Disasters: Designed Rainfall**, students are able to: a. Explain some types of hydrometeorologycal disaster b. Explain the definition, components, and methods to calculate designed rainfall 9. After following the lecture topic **Hydrometeorological Disasters: Drought**, students are able to: a. Explain the definition of drought b. Explain the factors related to drought in a specific region c. Explain the methods to predict drought in a specific region

	10. After following the lecture topic **Rainfall-Runoff Modelling in Urban Area**, students are able to: a. Explain the relation between rainfall and runoff b. Explain the related factors on rainfall-runoff in urban area c. Explain the rainfall-runoff model: SCS-CN 11. After following the lecture topic **Agrometeorology and Agroclimatology**, students are able to: a. Explain the relation between weather and agriculture b. Explain the relation between climate and agriculture c. Explain the relation between climate and vegetation d. Explain the concept of climate classification: world methods and Indonesian methods
Content	1. Concept of Hydrometeorology (problems related to weather and climate) 2. Hydrometeorology (data sources and components) 3. Hydrometeorology (measurement and analysis) 4. Evapotranspiration (concept and tools) 5. Evapotranspiration (factors related and methods of calculation) 6. Rainfall-station network design and Analysis of Inter-correlation among rainfall-stations 7. Rainfall Analysis 8. Water Balance (types and basic principals) 9. Principals of Water Balance Modelling based on watershed 10. Hydrometeorological Disasters (designed rainfall and flood) 11. Hydrometeorological Disasters (drought) 12. Application of Rainfall-Runoff Modelling in Urban Area 13. Agrometeorology and Agroclimatology
Study and examination requirements and forms of examination	Quiz (5 %), participation (5 %), assignment (20 %), discussion (10 %), mid-semester examination (30 %) dan final examination (30 %). Examination is formed in written test.
Media employed	- ELISA website - Internet - Computers - Interactive video - LCD projector
Reading list	Adidarma, W., 2010, Diktat Pelatihan Kekeringan, Balai Hita, Puslitbang SDA, Bandung. Hadisusanto, N., 2011. *Aplikasi Hidrologi*. Yogyakarta: Jogja Media Utama Qodriyatun, S.N., 2013. Bencana Hidrometeorologi dan Upaya Adaptasi Perubahan Iklim. *Info Singkat Kesejahteraan Sosial Vol V, No.10/II/P3DI/Mei/2013*.

	Sene, K., 2010. Hydrometeorology : Forecasting and Applications, Springer Dordrecht Heidelberg. Seyhan, E. 1995. Dasar-Dasar Hidrologi. Yogyakarta: UGM Press. Shelton, ML., 2009. Hydroclimatologu : Perspectives and Applications, New York : Cambridge Soemarto, S. 2006. Hidrologi Teknik. Malang: PPMTT. Soewarno, S. 1991. Hidrologi: Pengukuran dan Pengolahan Data Aliran Sungai (Hidrometri). Bandung: Penerbit NOVA. Thornthwaite, C.W., and J.P. Matter. 1957. Instruction and tables for computing potensial evapotranspiration and te water balance. Drexel Institute of Climatology. New Jersey. 401p. Tjasyono, B. 2004. Klimatologi. Bandung: Institut Teknologi Bandung. Vijay P Singh., and Donald K. Frevert, 2006. Watershed Models, Boca Raton : Taylor & Francis Wagener, T,m Wheater HS., Gupta, H., 2004. Rainfall-Runoff Modelling in Gauged and Ungauged Catchments, London : Imperial College Press