Module Descriptions

Module designation	**Climatology** (course code MPB 2288)
Semester(s) in which the module is taught	4st semester of Bachelor Programme in Biology
Person responsible for the module	1. Riza Linda, M.Si
Lecture (s)	1. Firman Saputra, M.Sc 2. Irwan Lovandi, PhD
Language	Indonesia
Names of other study programmes with which the module is shared	-
Relation to curriculum	Elective course
Teaching methods	Lecture, discussions
Workload (incl. contact hours, self-study)	Total workload: 4.38 ECTS Lecture: 26,6 hours (0,99 ECTS) Assignment: 46.5 hours (1.72 ECTS) Self-study: 44.9 hours (1.67 ECTS) Self-study hours are estimation numbers of hours; each student will approach studying in different ways.
Credit points	2 credits
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	***Intended Learning Outcomes (ILO)*** **Knowledge (ILO-2)** Able to integrate and apply biological science and other scientific fields that support the development of biological science **General Skill (ILO-3)** Able to collaborate effectively within a team and to communicate actively, both orally and in writing, in the domain of biology. ***Course learning outcomes (CLO)*** **CLO 16.** The ability to correlate biological sciences with global issues, including climate change, biodiversity conservation, and environmental sustainability. **CLO 17.** The ability to collaborate within a team to successfully complete case studies or projects in the field of biology and to present the findings effectively.

Content	Definition and scope of climatology, benefits of climatology, definition of atmosphere, composition of the atmosphere, division of atmospheric layers, diversity of earth's climate, global climate change, climate and distribution of living things, development of climate classification systems, basis of climate classification, global climate classification, climate classification in Indonesia, climate classification according to Koppen, meso-climate variation, microclimate variation and influence of climate on microclimate, terminology of physical aspects of light, physics of light, influence of falling angle and distance, intensity of light emission, distribution of radiation spectrum, characteristics of short wave radiation spectrum, estimation of the portion of direct and indirect radiation, long wave radiation, light energy balance, solar radiation, photoperiodicity, light measurement, the notion of temperature, dynamics and profiles of air temperature, soil temperature profiles, heat transfer, principles and biases in temperature measurement, temperature measurement instruments, temperature measurement units, temperature measurement at climatological stations, temperature variations in the region of Indonesia, the notion and terminology of air temperature humidity and precipitation, dynamics of water vapor in the air, air humidity profiles, air humidity measurement, air humidity regulation, and stages of the hydrological cycle.
Examination forms	1. Midterm 30% 2. Final Exams 40% 3. Assignment (quiz, scientific report, literature review) 20% 4. Student Activity 10%
Study and examination requirements	75% attendance
Reading list	1. Lakitan, B. (1994). Dasar-Dasar Klimatologi. PT. Grafindo Perkasa. Jakarta 2. Lutgens, F. K., Tarbuck, E. J., & Tasa, D. G. (2018). The Atmosphere: An Introduction to Meteorology (14th ed.). Pearson. 3. Tjasyono B.(2004). Klimatologi. Edisi ke-2. Penerbit ITB. Bandung 4. Hartmann, D. L. (2015). Global Physical Climatology (2nd ed.). Elsevier. 5. Partridge I.J. & Mansur Ma'shum. 2002. Kapan Hujan Turun (Dampak Osilasi Selatan dan El Nino di Indonesia). Department of Primary Industries. The State of Queensland. Toowoomba 6. Shiblu Sarker. (2022). Fundamentals of Climatology for Engineers: Lecture Note. Bureau of Watershed Management and Modeling, St. Johns River Water Management District. Palatka, FL 32177, USA.