MODUL
ENVIRONMENTAL AND DISASTER RISKS

ENVIRONMENTAL SCIENCE MASTER PROGRAM
GRADUATE SCHOOL
DIPONEGORO UNIVERSITY

Module Description :

Module design	Environmental and Disasters Risks
Module level, if applicable	
Code, if applicable	P-CIL-8-203
Subtitles, if any	
Course, if applicable	
Semester(s) in which the module is taught	Semester 2
Module responsible*	Principal Advisor
Teaching Lecturer	1. Principal Advisor 2. Co-Supervisor
Language	*Indonesian and English*
Relationship with curriculum	Students are ableunderstand disaster risks to the environment in various forms and their mitigation efforts.
Type of teaching, hours of contact	*Lectures: 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*
Workload	*(Estimated) workload, divided into contact hours (lectures, exercises, laboratory sessions, etc.) and personal study, including test preparation, specified in hours and overall.*
credit points	*2 credits/4 ECTS*
Requirements according to the exam regulations	*Lecture attendance of at least 75%*
Recommended prerequisites	

*Advanced lecture material conducted by the main supervisor, co-supervisors and students refers to the research topic.

Modulethe desired learning objectives/outcomes	Students are able to understand disaster risks to the environment in various forms and their mitigation efforts.
Fill	Disaster risk and environment courses provide additional insight for students to be able to understand disaster risk, its phenomena, forms, and mitigation efforts so that students can prepare disaster risk and control documents effectively and efficiently.
Study and examexam requirements and forms	• *Open the book and close the book* • *Multiple choice, case studies, interviews*
Media used	*Powerpoint, youtube, website*

Reference	1. Khambali, 2016, Disaster Management, ANDI Publisher, Yogyakarta 2. Bachtiar Erniati, et al (ed), 2021, Knowledge of Disasters and the Environment, Publisher of Our Writing Foundation, Medan 3. Lestari Puji, 2018, Disaster Communication Important Aspects of Disaster Risk Reduction, Publisher PT Kanisius, Yogyakarta 4. Musthofa, 2019, Unraveling the Chaos of Environmental Disasters (Reflections on Environmental Journalism and Deep Ecology in Indonesia), UMM Press Publisher and UMM PSLK, Malang 5. Noor Djauhari, 2014, Introduction to Geological Disaster Mitigation, Deepublish Publisher, Yogyakarta

SEMESTER STUDY PLAN

	Study program: Master of Environmental Science			**Faculty: School of Postgraduate**				
Subject:	**Environmental and Disaster Risk**	**Code: P-CIL-8-203**		**Credit:2 (4 ECTS)**		**smt:2**		
Supporting lecturer:	**1. Prof. Drs. Sudharto Prawata Hadi, MES, Ph.D** **2.** Prof. Dr. Istadi, ST, MT **3.** Prof. Dr. Tri Retnaningsih Soeprobowati, M.App.Sc							
Learning Outcomes Subject:	Students are able to understand disaster risks to the environment in various forms and their mitigation efforts.							
Short Description of Courses:	Disaster and environmental risk courses provide additional insight for students to be able to understand disaster risk, phenomena, forms, and mitigation efforts so that students can compile risk and disaster control documents effectively and efficiently.							

1	2	3	4	5	6	7	
Week	**Final Ability of each learning stage**	**Study Materials/ Subjects**	**Learning methods**	**Workload**	**Student Learning Experience**	**Evaluation**	
						Criteria & Indicators	**Weight (%)**
1	Understand the content and contract of lectures for the next semester.	Introduction. Riskin various forms.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5

				minutes • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*			
2	Understand disaster risk and its impact on the environment and life.	Risk quantification. Risk of death. Chances and possibilities. Risk perceptionand adjustmentto risk. Value oflife. Pattern of natural disaster loss.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
3	Understand the tornado phenomenon, its causes, and appropriate mitigation measures.	Tornado phenomenology. Atmospheric stability. Tornado hazard mitigation.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5

				Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)			
4	Understand the hurricane phenomenon, its causes, and appropriate mitigation measures.	Phenomenology and effects of storms. Storm mechanics. Coriolis effect.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
5	Understand how to predict hurricanes, hurricane mitigation efforts, and the mechanism of the earth's plate motion.	Storm prediction and hazard mitigation. plate tectonics. Earthquake phenomenology.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5

6	Understand the mechanism of earthquakesand mitigation efforts.	Earthquake mechanic. Earthquake effect. Earthquake hazard mitigation.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
7	Knowledge of earthquake and volcano mitigation planning.	Earthquake planning. Prediction and mitigation problems. Phenomenology of volcanoes. Volcanic danger.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
8	**Mid Term Examination**	**Meeting Material 1-7**	**Independent Written Test**	**216 minutes of processing time or the equivalent of 0.25 ECTS**	**Students working on UTS questions**	**Answer quality and timeliness**	**10**

9	Understand how to predict volcanic eruptions and mitigation efforts.	Volcano prediction and hazard mitigation.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
10	Understand the risks and efforts to mitigate radon exposure.	Exposure risk. Dosage and response. Radon. Biological effects of radiation.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
11	Understand the risks and efforts to mitigate asbestos exposure.	Exposure risk and epidemiology of radon. Other radiation exposure. Asbestos and	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5

		related health effects.		*minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*			
12	Understand the risks and efforts to mitigate arsenic exposure.	Risk of exposure and asbestos. Arsenic and other exposure hazards.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
13	Understand the watershed hydrological system and its role in disaster events.	Flood and watershed hydrology. River flows and river flooding.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5

				Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)			
14	Understand coastal processes and hazards and flood mitigation.	Coastal processes and hazards. Mitigation of flood hazards.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5
15	Understanding the processes and risks of climate disasters in coastal areas and effective mitigation efforts.	Coastal erosion, global warming, sea level change, and coastal development. Conclusion.	Lectures, discussions, and questions and answers.	216 minutes (0.25 ECTS) Consist of: • *Lecture = 1x 120 minutes* • *Q&A = 1 x 20 minutes* • *Discussion = 1 x 20 minutes* • *Presentation = 1 x 20 minutes* *Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)*	Lectures, discussions, and questions and answers.	Student attendance and activity.	5

16	Final Examination	Meeting Materials 1-15 (resume material)	Written test	216 minutes of processing time or the equivalent of 0.25 ECTS	Students working on UAS questions	Quality of answers and timeliness of collection	20
8. Reference List:		1. Khambali, 2016, Disaster Management, ANDI Publisher, Yogyakarta 2. Bachtiar Erniati, et al (ed), 2021, Disaster and Environmental Knowledge, Publisher of the Kita WritingFoundation, Medan 3. Lestari Puji, 2018, Disaster Communication Important Aspects of Disaster Risk Reduction, Publisher PTKanisius, Yogyakarta 4. Musthofa, 2019, Unraveling the Chaos of Environmental Disasters (Reflections on EnvironmentalJournalism and Deep Ecology in Indonesia), Publisher UMM Press and PSLK UMM, Malang 5. Noor Djauhari, 2014, Introduction to Geological Disaster Mitigation, Publisher Deepublish, Yogyakarta					