

SEMESTER STUDY PLAN							
	Study program: Master of Environmental Science			Faculty: Graduate School			
	Subject:	System Analysis and Environmental Modeling	Code: P-CIL-8-208	Credit:2 (4 ECTS)	Shem:2		
Supporting lecturer:	Ir. Setia Budi Sasongko, DEA, Ph.D Prof. Dr. Ir. Hadiyanto, ST, M.Sc. Prof. Dr. Sunarsih, MSi						
Learning Outcomes Subject:	• Able to understand problems with environmental modeling approach • Able to solve environmental problems with an environmental modeling approach						
Short Description of Courses:	This course studies the concept of sustainable development that integrates ecological systems to answer environmental problems						
1	2	3	4	5	6	7	
Week	Final Ability of each learning stage	Study Materials/ Subjects	Learning methods	Time	Student Learning Experience	Evaluation	
						Criteria & Indicators	Weight (%)
1	Able to mention real cases related to systems approach and systemic thinking	Exploration of real cases related to approach systems and systemic thinking	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • 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	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5

				<i>minutes/day (16 weeks)</i>			
2	Able to mention real cases related to systems approach and systemic thinking	Discussion of real cases of various system structures and behaviors	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i> <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5
3	Able to understand simulation cases using Vensim software	Discussion of simulation cases and model behavior using Vensim . software	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i> <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5
4	Able to understand systems science and modeling	Review of Articles Related to Systems Science and Modeling	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i>	Students listen to the lecturer's explanation and answer the	Presence Activeness in Discussion and Understanding	5

				• 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)	lecturer's questions, as well as discuss		
5	Able to practice model preparation and simulation	Practice Modeling and Simulation	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • 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)	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5
6	Able to understand Structural Modeling Positive, Negative and Oscillation Feedback	Article Review on Positive, Negative and Oscillation Feedback Structured Modeling	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • Lecture = 1x 120 minutes • Q&A = 1 x 20 minutes • Discussion = 1 x 20 minutes • Presentation = 1 x 20 minutes	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5

				<i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>			
7	UTS	Meeting Material 1-7	Written test	216 minutes of processing time or the equivalent of 0.25 ECTS	Students working on UTS questions	Completeness and quality of answers and timeliness	10
8	Able to understand Structural Modeling Positive, Negative and Oscillation Feedback	Article Review on Positive, Negative and Oscillation Feedback Structured Modeling	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • Lecture = 1x 120 minutes • Q&A = 1 x 20 minutes • Discussion = 1 x 20 minutes • Presentation = 1 x 20 minutes <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion Understanding	5
9	Able to understand modeling with case studies	Discussion and presentation of the results of reviews of national and international scientific publications related to environmental management modeling	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • Lecture = 1x 120 minutes • Q&A = 1 x 20 minutes • Discussion = 1 x 20 minutes • Presentation = 1 x 20 minutes	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion Understanding	5

				<i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>			
10	Able to understand problems with a modeling approach based on tree canopy aspects	Assignment to solve flood and landslide problems based on tree canopy aspects	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i> <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5
11	Able to understand problems with a modeling approach based on tree canopy aspects	Group discussion: cases in the field about flooding caused by deforestation and related to tree canopy aspects and presented	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i> <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5
12	Able to understand problems with	Presentation on adaptation	Lectures, questions and	216minutes (0.25 ECTS)	Students listen to the lecturer's	Presence	5

	environmental modeling approach	technology activities that can be developed through environmental modeling	answers, and discussions	• <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i> <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	explanation and answer the lecturer's questions, as well as discuss	Activeness in Discussion and Understanding	
13	Able to understand problems with environmental modeling approach	Presentation on mitigation activities that can be developed through environmental modeling	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i> <i>Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5
14	Able to understand problems with environmental modeling approach	Mathematical and dynamic environmental modeling presentation	Lectures, questions and answers, and discussions	216minutes (0.25 ECTS) • <i>Lecture = 1x 120 minutes</i> • <i>Q&A = 1 x 20 minutes</i> • <i>Discussion = 1 x 20 minutes</i> • <i>Presentation = 1 x 20 minutes</i>	Students listen to the lecturer's explanation and answer the lecturer's questions, as well as discuss	Presence Activeness in Discussion and Understanding	5

				20 minutes Individual Tasks (Self Work) = 1 x 36 minutes/day (16 weeks)			
16	UAS	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	Completeness and correctness of explanation and accuracy of understanding	20
8. Reference List:		1. Arifin Nofri., et.al. 2021. Information System Design Analysis. Cendekia Mulia Mandiri Publisher. Batam 2. Santi Indyah. System Design Analysis. 2020. Nasya Expanding Management Publisher. Pekalongan 3. Mulyani Sri. 2016. System Analysis and Design Method. Systematics Servant. Bandung 4. Sutabri Tata. 2012. Information System Analysis. Publisher ANDI. Yogyakarta					