SEMESTER STUDY PLAN

Study program: Master of Environmental Science				**Faculty: School of Postgraduate**			
Subject:	**Computer Applications and Environmental Modeling**	**Code: CIL-8-105**		**Credit:3 (6 ECTS)**		**smt:1**	
Supporting lecturer:	**1. Prof. Dr. Ir. Purwanto, DEA** **2.** Dr. Dwi P Sasongko, M.Sc. **3.** Dr. Istadi, ST, MT						
Learning Outcomes Subject:	Students understand modeling techniques to understand the behavior of engineered and natural systems and find solutions to problems resulting from the interaction between elements in engineering systems and nature. And also students are able to use Excel, Visual Basic, Access, SPSS, Word and Power Point application programs to process and analyze data.						
Short Description of Courses:	This course studies the history of systems and models in environmental management. Concepts and approaches, definitions and clarifications, various systems and models and their applications in environmental management, model construction, input-output models, system relations with models, simulations and case studies. And also study information search, environmental information systems, classification of environmental information, theoretical data and its relationship to environmental information, data processing using computers. Spreadsheet application (Excel), visual basic (Programming), Access (Database), SPSS (Statistics), word processing (Word), Presentation (Power Point).						

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.	Students are able to explain the history of systems and models in environmental management	History of systems and models in environmental management	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60*	Listening, summarizing and asking questions, giving opinions, answering questions	Ability to explainthe history of systems and models in environmental management	5

				minutes/day (16 weeks)			
2.	Students are able to analyze concepts and approaches and environmental modeling	Environmental Modeling Concepts and Approaches	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, summarizing and asking questions, giving opinions, answering questions	Ability to analyze environmental concepts and approaches and modeling	5
3.	Students are able to understand the definition and identify environmental models	Definition and Classification of Environmental Modeling	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, summarizing and asking questions, giving opinions, answering questions	Ability to understand definitions and identify environmental models	5
4.	Students are able to formulate models in research	Modeling type formulation	Discussions, assignments and presentations	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, summarizing and asking questions, giving opinions, answering questions	Ability to formulate a model of an environmental problem	5
5.	Students are able to develop alternatives from	Analyze and integrate	Task	330min (0.375 ECTS) Consist of:	Answering questions and	Ability to understand and	5

	the chosen model in completing a case study	alternatives in a case study		• *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* *Individual tasks: 60 minutes/day (16 weeks)*	developing alternatives in a case study	identify the appropriate model for a case study	
6.	Students are able to use the excel application program	Excel App	Lectures, discussions and practice	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use excel application program	5
7.	Students are able to use visual basic application programs	Visual Basic Application	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use visual basic application programs	5
8	**Mid Term Examination**	**Meeting Material 1-7**	**Independent Written Test**	**330 minutes of processing time or the equivalent of 0.25 ECTS**	**Students working on UTS questions**	**Quality of answers and timeliness of collection**	**10**

9.	Students are able to use the access application program	Access App	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use access . application programs	5
10.	Students are able to use the SPSS application program	SPSS App	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use SPSS application programs	5
11.	Students are able to use Microsoft Word application programs	Microsoft Word Application	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use Microsoft Word application programs	5
12.	Students are able to use the Microsoft Power Point application program	Microsoft Power Point App	Lectures and discussions	330min (0.375 ECTS) • Lecture:180 minutes • Q&A: 30 minutes • Discussion : 30	Listening, asking, answering questions and	Ability to use Microsoft Power Point application program	5

				minutes • Presentation : 30 minutes • Individual tasks: 60 minutes/day (16 weeks)	operating the software		
13.	Students are able to use the Origin Pro application program	Origin Pro App	Lectures and discussions	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use the Origin Pro application program	5
14.	Students are able to use the Mendeley application program	Mendeley App		330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60 minutes/day (16 weeks)*	Listening, asking, answering questions and operating the software	Ability to use the Origin Pro application program	5
15.	Students are able to apply software as a means of supporting presenting a scientific article or journal	Using and integrating the use of software in presenting scientific articles or journals	Task	330min (0.375 ECTS) Consist of: • *Lecture:180 minutes* • *Q&A: 30 minutes* • *Discussion : 30 minutes* • *Presentation : 30 minutes* • *Individual tasks: 60*	Using and integrating the use of software in presenting scientific articles or journals	Ability to analyze suitable software and integrate multiple software	5

				minutes/day (16 weeks)			
16	**Final Examination**	**Meeting Materials 1-15 (resume material)**	**Written test**	**330 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. Douglas, H. Environmental System Optimization. John Wiley 2. Thomannn, RV & Mueller, JA 1987. Principles of Surface Water Quality Modeling and Control, Harper & Row Publishers: New York. 3. Odum EP EcologySystems. Translated by Supriyonodkk, Erlangga Publisher: Jakarta 4. Software books related to Excel, Word, Access, Visual Basic, Power Point. 5. Software book related to Applied Statistics. 6. Singgih, Santoso. 1999. SPSS Processing Statistical Data Professionally. Elex Media Komputindo. 7. Sarwono, Jonathan. Research Data Analysis using SPSS. PublisherAndi. 8. Full Guide Microsoft Word XP for Windows. 2004. Andi Publisher. 9. Sianipar, Pandapotan Ir. 2003. Using Microsoft Office Powerpoint. ElexmediaKomputindo. 10. Maximizing Data Processing Automation Facilities and Functions with Microsoft Office Excel. PublisherAndi. 11. Visual basic 6.0 programming. PublisherAndi.					