FI481 Modeling and Simulation of Physics

Module name:	Module name: Modeling and Simulation of Physics						
Module level, if applicable:	Undergraduate						
Code:	FI-481						
Sub-heading, if applicable:	-						
Classes, if applicable:	_						
Semester:	7 th						
Module coordinator:	Lilik Hasanah						
Lecturer(s):	Lilik Hasanah						
Language:	Bahasa Indonesia						
Classification within the curriculum:	Compulsory course						
Type of Teaching:	Contact hours per week during the semester	Class Size					
1. Lecture (conceptual, contextual and problem-solving approaches through expository, discussions and exercises). 2. Structured activities (assignments based on conceptual, contextual and problem-solving approaches) 3. Self-study (reading literature and project)	2 hours 30 minutes	35					
Workload:	The total workload is 136 hours/8160 minutes (4.8 ECTS) per semester, consisting of 20 hours/1200 minutes lectures (0.71 ECTS) per week for 8 week, 57 hours/3420 minutes structured activities (1.48 ECTS) and 51 hours/3060 minutes self-study (1.71 ECTS) per week for 14 weeks, 8 hours/160 minutes for two exams (0.9 ECTS).						
Credit points:	4.8 ECTS						
Pre-requisites course(s):	FI121 Basic Physics I, FI122 Basic Physics II, FI222 Mathematical Physics I, FI240 Mathematical Physics II, FI461 Computational Physics						
After taking this course the students have ability to: CLO1. Describe system and model. CLO2. Describe physics modelling principal. CLO3. Describe numerical modelling techniques using various software. CLO4. Analyse computer simulation process. CLO5. Analyse the validation process.							

Content:	System and Model, Modelling system and signal, Physics Modelling Principal, Numerical Modelling Techniques using MATLAB, Linear System Analysis, Nonlinear System Analysis, Simulation, Model Validation.						
	The final mark will be weight as follow:						
	No	CLO	Assessment Object	Assessmen t Techniques	Weight		
Study/exam achievements:	1	CLO1, CLO2, CLO3	Subject specific competences: a. Assignments b. Exam: - Mid exam	Written Written test	25 % 30 %		
Otady exam domevernerity.	2	CLO4, CLO5	Subject specific competences: - Final Project - Presentati on	Performance Performance	30% 15%		
	Total	100%					
Forms of media:	Board, LCD Projector, Laptop/Computer, LMS						
Literature:	 Sridadi, B. (2009), Pemodelan dan Simulasi Sistem: Teori, Aplikasi dan Contoh Program dalam Bahasa C. Penerbit Informatika, Bandung. Suarga. (2005). Fisika Komputasi Solusi Problema Fisika dengan Matlab. Penerbit Andi, Yogyakarta. Ljung., Lennart., Glad., Tarkel., Hansson., Anders. (2021). Modeling and Identification of Dynamic Systems. Student literature. Hilpisch, Y. (2015). Derivatives analytics with Python: Data analysis, models, simulation, calibration and hedging. John Wiley & Sons. 						

PLO and CLO mapping

	PLO1	PLO2	PLO3	PLO4	PLo5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12
CLO1	\checkmark											
CLO2	\vee											
CLO3			1									
CLO4			1									
CLO5			V									