Pengantar Simulasi dan Permodelan

Course Brief Description:	Student will be able to demonstrate general understanding of Mathematical modeling and Simulation related to Agricultural Field, and have skill to draw a concept of mathematical modeling and simulate it. This course covers: (1) basic modeling and simulation, (2) dynamic model and simulation (3) model in discreet and continue, mathematic/empiric and stochastic model (4) algorithm of programming of model to simulate model in agricultural engineering.
Course Learning Objectives:	[1] Student will be able to demonstrate general understanding of Mathematical modeling and Simulation related to Agricultural Field. [2] Students will have skill to draw a concept of mathematical modeling [3] Students will have skill to simulate a mathematical model.
Related Expected Learning Outcomes (ELOs):	• ELO-3: Apply knowledge ofmathematics, sciences, and engineering principles in agricultural fields. • ELO-4: Use quantitative analysis, information technology and critical thinking in agricultural engineering orofession.
Teaching Method	• Lecture and in-depth discussion • Tutorial • Independent assignment • Mini Project Simulation
Grading Policy	• Quiz and Assignment : 20% • Exam : 50% • Mini Project : 30%
Reference	Hangos, K. amd I. Cameron, 2001. Process Modelling and Model Analysis. Academic Press, California.
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Course Outline

Lecture:	Topic:	
1	Introduction: Concepts	
2	Dimension in Modeling	
3	Finite Different Applications (Concepts)	Assignment 1
4	Finite Different Applications (Programming)	
5	Simulation in two-dimension	Quiz1
6	Case: Simulation of O_2 Deficit	
7	Mini Project Presentation 1	Mini Project 1
	Mid Test	

8	Dynamic Model	Assignment 2
9	Dynamic Simulation	
10	Cases in Dynamic Model and Simulation	Quiz 2
11	Monte Carlo Model	
12	Monte Carlo Simulation	
13	Case in Monte Carlo Model	Quiz 3
14	Mini Project Presentations 2	Mini Project 2
	Final Exam	