Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
IND404	System Dynamics	8	3	0	0	3	4

Prerequisites	IND304
Admission Requirements	IND304

Language of Instruction	French
Course Type	Elective
Course Level	Bachelor Degree
Objective	This course is designed to develop an understanding of complex systems. It aims to equip students with an advanced knowledge of causal mapping technique.
Content	Definition of a system, Complex systems, The modeling process, Structure and behavior of dynamic systems, Causal links, Causal loop diagrams, Stocks and Flows, Dynamics of stocks and flows, Dynamics of simple structures, The dynamics of growth, Delays
References	Sterman, J. D., “Business Dynamics: Systems Thinking and Modeling for a Complex World”, Irwin McGraw-Hill, Boston, MA, 2000. Morecroft, J., “Strategic Modelling and Business Dynamics: A Feedback Systems Approach”, John Wiley and Sons, England, 2007. Erkut, H., “Analiz, Tasarım ve Uygulamalı Sistem Yönetimi”, İrfan Yayıncılık, İstanbul, 2005.

Theory Topics

Week	Weekly Contents
1	Definition of a system
2	Complex systems
3	The modeling process
4	Structure and behavior of dynamic systems
5	Causal links
6	Causal loop diagrams
7	Causal loop diagrams
8	Stocks and Flows
9	Midterm exam
10	Dynamics of stocks and flows
11	Dynamics of simple structures
12	The dynamics of growth • S- shaped growth
13	The dynamics of growth • Path dependence and positive feedback
14	Delays