CEV427 Analysis of Environmental Systems
Fall 2020

Recep Kaya Göktaş, rkaya.goktas@kocaeli.edu.tr, Room: 2028

Course Schedule:
Day: Wednesdays, 14:00 – 16:50
Night: Wednesdays, 17:00 – 19:40

Course Homepage: http://rkgoktas.wordpress.com/CEV427

Course Objectives: The objective of this course is to provide an introduction to system thinking as applied to environmental problems. The techniques for understanding the dynamics of environmental systems are covered at an introductory level. The basics of system dynamics modeling techniques are covered. Complex environmental problems are qualitatively analyzed by the help of the recent literature through reading and writing assignments, as well as class discussions.

Course Content: Introduction to systems thinking. Introduction to systems analysis. System dynamics models and simulation analysis. System thinking in environmenal science and engineering. Complex environmental problems (e.g. climate change, human population growth).

At the end of this course, you will:
- *have an introductory understanding of systems thinking*
- *have an introductory understanding of complex systems*
- *develop basic skills for the analysis of environmental systems*

RESOURCES

Textbook
- Modeling the Environment, 2nd Edition. 2010. Andrew Ford.

References
- Dynamic Modeling of Environmental Systems. 1999. Micheal L. Deaton & James J. Winebrake. Springer.
- Thinking in Systems: A Primer. 2008. Donella H. Meadows.
- System Dynamics: System Feedback Modeling for Policy Analysis, 2002. Yaman Barlas. Encyclopedia of Life Support Systems (EOLSS), UNESCO Publishing, Paris-Oxford

CEV427 Analysis of Environmental Systems
Fall 2020

Grading

Activity	Quantity	%
Midterm Exam	1	28
Homeworks	2	28
Class Participation	1	14
Final Exam	1	30

Tentative Syllabus

The week of ...	What is going to be covered?
7 October 2020	Introduction
14 October 2020	The Basics of System Structure and Behaviour
21 October 2020	Introduction to Dynamic Modeling of Environmental Systems
28 October 2020	*National Holiday (Cumhuriyet Bayramı)*
4 November 2020	Review of Units & Systems Zoo
11 November 2020	Common Behaviour Patterns in Dynamic Systems
18 November 2020	Common Behaviour Patterns in Dynamic Systems
25 November 2020	*Midterm Exam*
2 December 2020	How to Start Building System Dynamics Models
9 December 2020	Strategies for Analyzing and Using Environmental Systems Models
16 December 2020	
23 December 2020	
30 December 2020	Why Systems Surprise Us
6 January 2020	*Modeling Homework Presentations*
11 January 2020	*Final Exam*