

# MS-E2170 - Simulation (V)

## System dynamics

Aalto University School of Science

*Department of Mathematics and Systems Analysis*

Spring 2023

# MS-E2170 Simulation (V)

## – System dynamics

Note: This variable topic (v) course is about **System dynamics** on odd years and **Discrete Event System** simulation on even years

### Completing the course

Four home assignments and a project work.

Home assignments are given at exercise sessions, done individually and returned by next week.

The project work is a simulation study conducted by a group of 1 to 3 students. Projects are presented during last week.

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## – System dynamics

### Course material:

- Sterman J.D., 2000, Business Dynamics: Systems Thinking and Modeling for a Complex World, McGraw-Hill.
- Lecture slides and exercises:  
<https://mycourses.aalto.fi/course/view.php?id=36200>
- Vensim PLE (Personal Learning Edition) software, free version:  
<https://vensim.com/vensim-personal-learning-edition/>  
<http://vensim.com/free-download>

# Events

## **Lectures (Risto Lahdelma)**

- Mondays 10-12, M237
- Tuesdays 10-12, U256

Totally about 9 lectures, which means some weeks there is only one lecture

## **Exercises (RL / Pengmin Hua / Zichan Xie)**

- Thursday 12-14, by Y344

## **Questions?**

- Mail the lecturer or assistant with "Simulation" in the subject field  
(I am getting 100+ emails every day, and cannot read them all, but will try to read the important ones based on subject)

# Course summary

- **Learning outcomes:** Learn to identify, model and understand a variety of economic, organizational and socio-technical systems through simulation. Recognize principles of systems thinking and are able to apply them to construct a system dynamics simulation model for problem solving.
- **Content:** We will discuss the analysis and control of dynamic system, model building and validation. We will also go through the basics of Vensim-software and present some practical system dynamics applications.