Modélisation et simulation

Lecturer
Gianluca BONTEMPI (Coordinator)

Course mnemonic
INFO-F305

ECTS credits
5 credits

Language(s) of instruction
French

Course period
First term

Campus
Plaine

Course content

1) Introduction to modelling and simulation 2) introduction to dynamical systems 3) Discrete-state and discrete-time systems 4) continuous time dynamical systems 5) continuous linear systems 6) nonlinear continuous systems 7) discrete-time systems 8) Monte Carlo simulation 9) discrete-event simulation

Objectives (and/or specific learning outcomes)

Introduction to the notions of modelling and simulation of dynamical systems and their application to real problems. Introduction to the tools (Simulink) and languages for computer simulation.

Pre-requisits and co-requisits

Pre-requisites courses

INFO-F205 | Calcul formel et numérique | 5 crédits

Co-requisites courses

INFO-F205 | Calcul formel et numérique | 5 crédits

Teaching method and learning activities

Lectures, exercises and practical assignments. Some assignments involve practical work using the software package Octave.

References, bibliography and recommended reading

1) D. G. Luenberger (1979) "Introduction to Dynamic Systems. Theory, Models and Applications". J. Wiley and Sons. 2) S. H. Strogatz (1994) "Nonlinear dynamics and chaos" Westview Press. 3) S. Lynch (2004) "Dynamical systems with applications using MATLAB" Birkhauser. 4) S. Rinaldi (1981) "Teoria dei sistemi" Clup. 5) A. M. Law, W. D. Kelton (1991) "Simulation modeling and analysis", McGraw Hill

Course notes

Syllabus and Université virtuelle

Other information

Place(s) of teaching

Plaine

Contact(s)

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Evaluation method(s)

written examination and Project

Evaluation method(s) (additional information)

Modelling computer project (with Octave)+ written exam

Determination of the mark (including the weighting of partial marks)

18/20 (written assessment), 2/20 (project)

Main language(s) of evaluation

French

Programmes

Programmes proposing this course at the faculty of Sciences

BA-INFO | Bachelor in Computer science | unit 3, BA-MATH | Bachelor in Mathematics | unit 3 and MA-ACTU | Master in Actuarial Science | finalité Professional/unit 1