Course description
Modeling and Simulation

SDU

Modeling and Simulation

Academic Study Board of the Faculty of Engineering

Course ID: T520005101
Teaching language: English
ECTS value: 5
EKA: T520005102
Censorship: Second examiner: External
Date of Approval: 31-08-2018
Grading: 7-point grading scale
Offered in: Odense
Offered in: Autumn
Duration: 1 semester
Level: Master

Version: Archive

Course ID
T520005101

Course Title
Modeling and Simulation

ECTS value
5

Internal Course Code
SM1-MAS

Responsible study board
Academic Study Board of the Faculty of Engineering

Date of Approval
31-08-2018

Course Responsible

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Programme Secretary

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Offered in
Odense

Level
Master

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Autumn

Duration
1 semester

Mandatory prerequisites
Some experience in programming and knowledge of basic mathematics and statistics

Learning objectives - Knowledge
- Demonstrate knowledge about general and specific theories, challenges, algorithms, methods, technologies, and tools related to modelling and simulation
- Demonstrate knowledge of two important classes of simulation:
  - Discrete-event Monte-Carlo simulation
  - Continuous simulation with ODEs
- Demonstrate knowledge of algorithms necessary to build a simulator

Learning objectives - Skills
- Analyse suitability of an approach/tool for a given modelling problem
- Understand simulation models of various types
- Demonstrate methods and techniques to overcome common challenges in modelling and simulation
- Analyse and model as discrete stochastic system
- Analyse and interpret simulation results
- Model simulation input data

Learning objectives - Competences
- Use different methods to conduct simulation-based analysis of real world data
- Build and simulate stochastic models
- Use the simulation software AnyLogic

Content
Modeling and Simulation is the most widely used operations research / systems engineering technique for designing new systems and optimizing the performance of existing systems. In one way or another, just about every engineering or scientific field uses simulation as an exploration, modeling, or analysis technique. The course is designed to provide students with basic knowledge of modeling and simulation approaches and to provide them with first experience of using a simulation package. The course will focus on modeling and simulation of real-world discrete event systems. Examples of discrete events are customer arrivals at a queue of a service desk, biochemical reactions in a living cell, telephone calls in a call center, etc. Moreover, continuous and hybrid models will be also discussed. Topics include Discrete-Event Simulation, Input Modeling, Output Analysis, Random Number Generation, Stochastic Petri Nets and Markov Chains.

URL for Skemaplan

Odense
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Teaching Method
Lectures, exercises and mini project. A detailed course plan will be published before the semester start.

Number of lessons
48 hours per semester

Teaching language
English

Examination regulations

Exam regulations

Name
Exam regulations

Examination is held
By the end of the semester

Tests

Exam

EKA
T520005102

Name
Exam

Form of examination
Oral exam

Censorship
Second examiner: External

Grading
7-point grading scale

Language
English

ECTS value
5

Courses offered

Period	Offer type	Profile	Programme	Semester
Fall 2019	Mandatory	Software Engineering	Master of Science in Engineering (Software Engineering) | Odense	1

Studieforløb

Profile	Programme	Semester	Period