Introduction to Simulation

Winter

(in German: Introduction to Simulation)

Module-ID: FIN-INF-100372

Abbreviation	Credit Points	Semester	Term	Duration	Language	Level
ItS	5	Winter	starting at 5.	1 Semester	english	Bachelor

Link:	LSF
Limited accessability:	
Responsibility:	Graham Horton
Lecturer:	Graham Horton
Classes:	• Lecture *Introduction to Simulation* • Exercise class *Introduction to Simulation*
Applicability in curriculum:	- B.Sc. INF: Informatik - Wahlpflicht - B.Sc. INF: Studienprofil: Computer Games - B.Sc. INF: Informatik Wahlpflicht (SPO 2027) - B.Sc. CV: Informatik - Wahlpflicht - B.Sc. CV: Anwendungsfach - Computer Games - B.Sc. CV: Computervisualistik Wahlpflicht (SPO 2027) - B.Sc. INGINF: Informatik II - Pflicht - B.Sc. INGINF: Ingenieurinformatik Pflicht (SPO 2027) - B.Sc. WIF: Gestalten und Anwenden - Wahlpflicht - B.Sc. WIF: Informatik Wahlpflicht (SPO 2027) - B.Sc. INF (bilingual): Informatik - Wahlpflicht - B.Sc. INF (bilingual): Informatik Wahlpflicht (SPO 2027)

Intended learning outcomes:
Students who complete the course ...

- can use a professional simulation tool

- know the practical considerations when solving initial value problems numerically
- can carry out input and output analysis for stochastic, discrete-event models
- can model simple systems as stochastic Petri nets, ordinary differential equations and discrete-time Markov chains
- know and understand the steps in a simulation study

Content:
Introduction to the fundamentals and steps in a simulation study:

- discrete-event simulation
- random variables and random number generation
- statistical data analysis
- ordinary differential equations and numerical integration
- stochastic Petri nets
- the AnyLogic simulation system
- discrete-time Markov chains
- agent-based simulation

Workload:
56 contact hours + 94 h self study

Pre-examination requirements:	Type of examination:	Teaching method / lecture hours per week (SWS):
	120 min written exam	• Lecture 2 SWS • Exercise class 2 SWS

Prerequisites according to examination regulations:	Recommended prerequisites:
none	Mathematik 5

Media:	Literature:
	Banks, Carson, Nelson, Nicol: Discrete-Event System Simulation

Comments:

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