Operations Modeling

Module	Operations Modeling				
Module Code	MGT60260				
Module Coordinator	Strohhecker, Jürgen				
Last Update	2015/07/27				
Target Group	Programme(s)		Bachelor of Science		
	Term		6th semester		
	Compulsory/Elective Module		Elective Module		
	Module Duration		1 Semester		
	Credits:		6		
	Frequency		Annually		
	Language of instruction		English		
Workload:	150 h	Contact hours:	44 h	Independent Learning:	86 h	Assignments:	20 h
Prerequisites	Operations Management				
Usability in other Modules/Programmes	Operations Project Field Study				

Intended Learning Outcomes	**Knowledge**: On successful completion of the module, the participants will have knowledge of a range of operations modeling tools (as listed in the module overview), i.e. they can • describe the modeling tools introduced in this module • explain and operate the toolset introduced in this module • evaluate the tools and discuss their strength and weaknesses **Skills**: On successful completion of the module, students will have the proven ability to apply modeling techniques to practice-oriented challenges, i.e. they can • analyze, structure and classify a range of operations management challenges in practice and theory • develop an adequate quantitative model (for instance, discrete event simulation model, linear program, PERT/CPM) by applying the appropriate modeling technique • analyze the model to solve an operations management challenge • use general software packages (for example Microsoft Excel) and specific simulation software (for example Arena) to support quantitative modeling **Competencies**: Successful module participants develop the competence to provide responsible contributions in establishing concepts and processes in operations management. They acquire the ability to further develop and adapt to the needs in practice. They can • present operations management challenges and models to a management audience • present model based results and scenarios to a management audience • argue competently about adequate problem solution strategies
Module Structure	<u>Methods</u> <u>Areas of Application</u> Discrete Event Simulation (DES) PERT/CPM Linear Programming (LP) Stochastic Modeling Analytic Modeling Process Design Inventory Management Demand Planning Scheduling Supply Chain Management Project Management (PM)

Module Overview	In this module students will learn a variety of (mostly quantitative) modeling techniques and management methods to solve operations management challenges. These challenges are drawn from various Operations Management areas including process design, supply chain management, scheduling, supply and demand planning, and project management.
	Modeling Techniques Areas of Application
	– Discrete Event Simulation (DES) – Process Design
	– PERT/CPM – Inventory Management
	– Linear Programming (LP) – Demand Planning
	– Stochastic Modeling – Scheduling
	– Analytic Modeling – Supply Chain Management
	– Project Management (PM)
	Students will learn how to develop models, analyze and provide data, solve models, conduct optimization and sensitivity analyses and interpret and communicate results. Both general software packages (for example Microsoft Excel) and specific simulation software (for example Arena) are used.
	By successfully passing this module participants will have the knowledge and tools at hand to conduct Operations Management consulting projects, specifically (discrete event) simulation studies.
Forms of teaching, methods and support	Teaching format consists of interactive lectures, workshop-style lectures, self-study elements, exercises, modeling challenges and a small-scale practice project. Participants will often work in small groups with close interaction with the lecturer. Teaching builds on the idea that modeling is best acquired through learning by doing, i.e. through applying it to various hands-on challenges.

Type of Assessment in the Module and Performance Points	Type of examination	Duration or length	Performance points	Due date or date of exam
	Modeling and simulation exercises	16 h (workload)	20	Homework and in-class, tba
	Modeling and simulation in-term exam	45 min	20	In class, tba
	Modeling and simulation case study	16 h (workload)	20	Last third of the semester, tba
	Written Exam	60 min	60	End of semester

Examination requirements:
For some assignments a computer with Windows 7 or higher will be needed. Discrete event simulation software will be provided.

Recommended Literature	Heizer, Jay; Render, Barry: Operations Management, Sustainability and Supply Chain Management, 11th ed., Pearson 2014 (Global Edition) Alternatively: Heizer, Jay; Render, Barry: Operations Management, 10th ed., Pearson 2011 (Global Edition) Kelton, W. David; Sadowski, Randall P.; Zupick, Nancy B.: Simulations with Arena, 6th ed: McGraw-Hill, 2014 Kelton, W. David; Smith, Jeffrey S.; Sturrock, David T.: Simio & Simulations, Modeling, Analysis, Aplications, 2nd ed., McGraw-Hill, 2011