

Title of the course: Environmental simulation	NEPTUN-code: RKWSI1ABNE	Weekly teaching hours: $l+cw+lb$ 1+0+1	Credit: 2 Exam type: tm
Course leader: Ágnes Bálint-Mészáros, Dr.	Position: Associate professor	Required preliminary knowledge: -	
Curriculum:			
<p>A) MODELS AND SIMULATION IN ENVIRONMENTAL SCIENCE:</p> <p>History module: when to apply simulation, simulation (definitions, purposes), what is the system model experiment? The models are grouped and model types.</p> <p>Classification of computer simulation, the simulation model, the general process of simulation, the types of calculations, the realization of simulation types and simulation. Numerical solution steps and the modelling workflow modelling calculations.</p> <p>B) MODELLING OF ENVIRONMENTAL PROCESSES:</p> <p>Characteristics of the soil-plant-atmosphere systems; soil process models, and modelling of different scales; modelling of the processes in soils, model parameters, and rating sensitivity analysis of models and results of models.</p> <p>C) Capacitive crop simulation models:</p> <p>The Environmental Economic Models: Structure of the crop simulation models and application of crop simulation models.</p>			
Professional competencies:			
<p>Knowledge of general and specific mathematical, natural and social scientific principles, rules, relations, and procedures as required to pursue activities in the special field of environment protection.</p> <p>In possession of state-of-the-art IT skills, being able to use professional databases and certain design, modelling, and simulation software depending on their specialty.</p> <p>Knowledge of the main methods to examine the quantity and quality features of environmental elements and systems, their typical measuring instruments and limitations thereof, as well as methods for the evaluation of data measured.</p> <p>Able to take part in environment expertise, advisory, and decision preparation work.</p>			
Literature:			
1. Roger McHaney: Understanding Computer Simulation, 1st edition, Roger McHaney and bookboon.com, 2009, ISBN 978-87-7681-505-9			
2. Editors: Robert W. Marans, Daniel Stokols: Environmental Simulation, SBN: 978-1-4899-1142-1 (Print) 978-1-4899-1140-7 (Online), Springer Verlag, 1993			
3. Miguel F. Acevedo: Simulation of Ecological and Environmental Models, August 25, 2012 by CRC Press, Textbook - 486 Pages - 265 B/W Illustrations, ISBN 9781439885062 - CAT# K13987			
Comment:			