



MasterOnNewTechnologiesUsingServices

INTEGRATED WATER AND SOIL MANAGEMENT

Vrije university Brussels

17-21 February 2020



VRIJE
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BRUSSEL

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Lecture 1: Global Water Resources	
Learning Activity	Introduction lecture about WR and small quiz
Learning Objectives	to understand the concepts of the Hydrological cycle and different WR nationally and internationally
Assessment	Gamification
Time allocated	3 Hours

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Lecture 2:	Water scarcity
Learning Activity	lecture about water shortages and international and national disputes and small quiz
Learning Objectives	discuss the future of global water resources, including problems of water scarcity and water security nationally and internationally.
Assessment	Gamification
Time allocated	3 Hours

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Lecture 3:	The impact of climate change on water resources
Learning Activity	Lecture about the concepts and formalisms in atmosphere and climate science; Climate Change: the Physical science basis + Quiz
Learning Objectives	Understand the basic concepts and formalisms employed in meteorology and climate science. Understand the physical science basis underlying current knowledge on climate change.
Assessment	Gamification
Time allocated	3 Hours

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Lecture 4:	Introduction to transdisciplinary WRM
Learning Activity	introduction lecture about WRM + Quiz
Learning Objectives	critically reflect on different disciplines involved in water management and identify role for own expertise
Assessment	Gamification
Time allocated	3 Hours

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Lecture 5:	Stakeholders analysis
Learning Activity	Lecture and group work
Learning Objectives	Analyze different uses and users of water and argue the role different stakeholders play in WRM
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 6:	Water governance and economy
Learning Activity	Lecture and group work
Learning Objectives	<p>Water governance: Critically assess governance arrangement in transboundary water management and link to legal and policy frameworks</p> <p>Water Economics: Explain basic principles of water economics, Assess water demand and productivity and its evolution over time</p>
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 7:	DPSIR concept analysis
Learning Activity	Lecture and group work
Learning Objectives	Apply DPSIR in the analysis of water management issues
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 8:	SWAT Model Introduction
Learning Activity	Lecture: Introduction, modle set up and process decription + Quiz
Learning Objectives	Learns the theoretical and the practical aspects behind the application of the SWAT (Soil and Water Assessment Tool) software
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 9:	Modeling procedures & model output analysis
Learning Activity	Lecture about Modeling procedures & model output analysis + practical exercise
Learning Objectives	learns to go through the full procedure of applying surface water modelling tools including the building, the calibration and the use for scenario analysis
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 10:	Sensitivity analysis and calibration, SWAT-CUP, model procedures
Learning Activity	Lecture and video about Sensitivity analysis and calibration, SWAT-CUP, model procedures
Learning Objectives	learns to go through the full procedure of applying surface water modelling tools including the building, the calibration and the use for scenario analysis
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 11:	Introduction to QSWAT
Learning Activity	Short introductory tutorial on how to set up the SWAT model.
Learning Objectives	Learns the theoretical and the practical aspects behind the application of the SWAT
Assessment	practical exercise
Time allocated	3 Hours

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Lecture 12:	SWAT model Building
Learning Activity	Practical exercise: Model Building
Learning Objectives	learns to go through the full procedure of applying surface water modelling tools.
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 13:	SWAT model Building
Learning Activity	Practical exercise: Model calibration and validation
Learning Objectives	learns to do an evaluation/quality assessment and critical analysis of the modelling results
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 14:	Scenario analysis
Learning Activity	Practical exercise and Intermediate group presentations
Learning Objectives	learns to go through the full procedure of applying surface water modelling tools including the building, the calibration and the use for scenario analysis
Assessment	Group assignment
Time allocated	3 Hours

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Lecture 15:	Final Presentation
Learning Activity	Final report + presentations
Learning Objectives	<p>get experienced with project management by working in a multidisciplinary group work, and the independent search for information (including the use of the website).</p> <p>learns to do the editing of scientific reports and on the presentation of research results.</p>
Assessment	Final report + presentations
Time allocated	3 Hours



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Content	Teaching organization					Total
	Class			Practice, experiment , fieldwork	Self-study	
	Theory	Exercise	Discussion			
Lecture 1	3				6	3
Lecture 2	3				6	3
Lecture 3	2		1		6	3
Lecture 4	3				6	3
Lecture 5	1	1	1		6	3
Lecture 6	1	1	1		6	3
Lecture 7	1	1	1		6	3
Lecture 8	3				6	3
Lecture 9	1	2			6	3
Lecture 10	1	2			6	3
Lecture 11	1	2			6	3
Lecture 12		2	1		6	3
Lecture 13		2	1		6	3
Lecture 14		2	1		6	3
Lecture 15			3		6	3