SMART4ENV International Applied Courses and Massive Open Online Course

MOOC1: SES Applied to Water, Wastewater, Smart Irrigation in Agriculture, Maritime/Coastal and Air Quality Domain

WASTEWATER MODULE			
1	**Part 1: Brief review of basics of wastewater treatment processes**	Prof. Anna Laura Eusebi, UNIVPM	60 min
	Self-Assessment Module		
	Part 2: Sludge treatment: general and innovation	Prof. John Morken – NMBU	60 min
	Self-Assessment Module		
2	***Part 1:* Wastewater treatment: main problems related to phosphorus removal and recovery**	Prof. Francesco Fatone, UNIVPM	48 min
	Self-Assessment Module		
	Part 2: Digital tools in sludge management	Prof. Hasha Ratnaweera – NMBU	56 min
	Self-Assessment Module		
3	**Part 1 – Resource recovery from industrial wastewater generated in the agri-food sector: nutrients and water reuse**	Lidia Paredes, Beta Technological Center - UVIC-UCC	40 min
	Self-Assessment Module		
CERTIFICATION			

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AGRICULTURE MODULE			
1	**Introduction to AI, IoT and Remote Sensing (60 minutes)**	Dr. Gagan Narang	60 min
	Quiz Module 1		
2	**Part 1: Fundamentals of time series algorithms using ML and DL**	Prof. Adriano Manchini, Dr. Alessandro Galdelli Dr. Gagan Narang	1 hour 35 min
	Part2: Time Series Analysis for Precision Agriculture	Prof. Adriano Manchini, Dr. Alessandro Galdelli Dr. Gagan Narang	48 minutes
	Google Earth Engine Resources		
	Part 3: Satellite Imagery Analysis using Google Earth Engine: Filtering and Displaying the satellite images	Prof. Adriano Manchini, Dr. Alessandro Galdelli Dr. Gagan Narang	30 min
	Quiz Module 2		
Materials for Module 1 and 2			
3	**Regenerative agriculture: Management of Carbon Stocks**	Rosa Vilaplana Beta Technological Center - UVIC-UCC	46 min
	Quiz Module 3		
4	**Nutrient Management Strategies on Soil and Principles of Fertigation**	Rosa Vilaplana Beta Technological Center - UVIC-UCC	51 min
	Quiz Module 4		
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AIR QUALITY MODULE			
1	**General concepts on air quality modelling and monitoring**	Prof. Giorgio Passerini, UNIVPM	60 min
	Self-Assessment Module		
2	**Airborne pollutant emission monitoring and estimate. EMEP-Corinair, AP42, IPCC methodologies**	Prof. Giorgio Passerini, UNIVPM	60 min
	Self-Assessment Module		
3	**Diffusive modelling: Eulerian models, Gaussian models. State-of-art and /or regulatory models: Aermod, Calpuff etc.**	Prof. Giorgio Passerini, UNIVPM	57 min
	Self-Assessment Module		
4	**Introduction to dynamic meteorology. Meteorology of planetary boundary layer**	Prof. Giorgio Passerini, UNIVPM	60 min
	Self-Assessment Module		
5	**Introduction to modelling and assessment of secondary pollutants: basic chemistry and precursors. Introduction to State-of-art models: WRF-Chem and CAMX**	Prof. Giorgio Passerini, UNIVPM	60 min
	Self-Assessment Module		
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COASTAL MODULE			
1	**Basics of coastal/maritime mathematical modeling: NSWE and Boussinesq equations -**	Prof. Maurizio Brocchini	2 hours 25 min
2	**Application of numerical modeling for coastal environments: FUNWAVE-TVD -**	Dr. Lorenzo Melito	60 min
3	**Application of numerical modeling for coastal environments: XBeach**	- Dr. Francesco Marini	1 hour 15 min
	Free resources for the marine environment	Dr. Lorenzo Melito	58 min
	MATERIALS: "Free resources for the marine environment" - Lecture exercises		
	MATERIALS: "Free resources for the marine environment" - Further exercise on single-node datasets		
	MATERIALS: "Free resources for the marine environment" - Further exercise on gridded datasets		
	Self-assessment test for Coastal Management Module		
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