Co-funded by the European Union

BLENDED INTENSIVE PROGRAMME

GENERAL INFORMATION

BIP Title	**From Sensors to the Data Analysis Soil-Water Holistic Approach**
BIP Code	
Coordinating Institution - Faculty	University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMVB) - Faculty of Land Reclamation and Environmental Engineering
Dates for physical mobility	June 15-19, 2026
Proposed period for virtual component	May 18-22, 2026 June 30, 2026
Priorities addressed	☐ Inclusion and diversity ☑ Digital transformation ☑ Environment and fight against climate change ☐ Participation in democratic life ☑ Others
ECTS	3
Objectives and short description / abstract	The BIP entitled „From Sensors to the Data Analysis Soil-Water Holistic Approach" aims to develop a project-based learning activity. The curriculum focuses on developing students' practical skills in assessing water and soil quality using various field and lab techniques that comply with national and EU standards. A key component is exploring technology such as the Tomographic C-Band SAR Pilot for real-time crop monitoring. All activities are set against the backdrop of climate change and its effect on soil water-holding capacity, and are designed to significantly enhance students' teamwork and communication skills within an international setting.

Methods (including final evaluation method) **and results / learning outcomes**	**Final evaluation method:** project **Learning outcomes** - At the end of the BIP, the students will have gained knowledge on: 1. Real-time monitoring of crops. 2. Assessment of water's physical and chemical quality parameters. 3. Determination of soil physical properties from the Moara Domnească Didactic Farm. 4. Soil erosion and conservation within the context of current climate changes. 5. Sensor reliability in water management. 6. Tomographic C-Band SAR experiment for Earth Observation applications and in-situ ancillary sensors. 7. Soil water-holding capacity—a property sensitive to agricultural practices and climatic extremes. 8. Climate changes in Europe and Romania over the last decade.
Partner institutions	1. 2. 3.
Total number of learning hours	75 hours, divided as follows: 25 hours of virtual component 40 hours of physical mobility (minimum 5 days) 10 individual study hours
Scientific coordinator	Prof. dr. Ana VÎRSTA (ana.virsta@usamv.ro)
Administrative coordinator	Assoc. prof. dr. Andreea OLTEANU (andreea.olteanu@fifim.ro)
Teaching team (professors from partner universities are welcomed to teach)	1. Prof. dr. Silvia Vasilica STAN - USAMVB 2. Assoc. prof. Ovidiu JERCA - USAMVB 3. Assoc. prof. Tatiana OLINIC - USAMVB 4. Assoc. prof. Constanța MIHAI - USAMVB 5. Lecturer dr. Adriana PIENARU - USAMVB 6. Lecturer dr. Octavian BALOTĂ - USAMVB 7. Prof. dr. Sevastel MIRCEA - USAMVB 8. Dr. Elena MATEESCU - ANM 9. Dr. Florin ȘERBAN - Terrasigna
Number of learners	15-20
Target group / learner profile (study level, specialisation etc)	Bachelor's or Master's degree in Civil Engineering, Environmental Engineering or a closely related field

Selection criteria (English language level, prerequisites)	English B1/B2 Knowledgeable in Civil Engineering, Environmental Engineering field or a closely related field

TEACHING CONTENT

	Daily program	**Content - lectures, workshops, educational trips.**
Virtual component	May 18, 2026	• Welcome speech, presentation of the universities/faculties • Presentation of the blended intensive programme (BIP). • Teachers' presentation • Students' introductory presentations
	May 19, 2026	• *Lecture*: Spatial variation of soil parameters using Surfer software • *Lecture*: TBA
	May 20, 2026	• *Lecture*: What can (and what can't) sensors show about water management on farms • *Lecture*: The water-holding capacity of soil – a property affected by both agricultural practices and climatic extremes
	May 21, 2026	• *Lecture*: Climate changes in Europe and the Challenges of Regional Early Warning Initiatives • *Lecture*: Soil Erosion Impact on Environment and Best Conservation Practices
	May 22, 2026	• *Lecture*: The use of AI in LIDAR data classification • Conclusions from the first virtual session
	June 30, 2026	• Students' project presentations • Round-up session and feedback
Physical mobility	June 15, 2026	• Welcome meeting ("Agronomie – Herăstrău" Campus, Rectorate Building, Senate Hall) • Guided Tour „Agronomie-Herăstrău" Campus;

		• Team organization and topic selection • *Lecture*: Sustainable ways and sources of organic matter for improving soil water properties and efficient use of water • Lunch break (1.5 hours free time) • Visit to the University greenhouse to determine the environmental parameters for horticultural crop growth in controlled environments and to present the functioning of the data logger • Romanian traditional dinner
	June 16, 2026	• Real-time Crop Monitoring Field Demonstration. Visit the Agronomic University Moara Domnească Research & Didactic Farm to observe the Tomographic C-Band SAR Pilot and conduct soil and water sample collection • Workshop lunch • *Workshop*: In-situ monitoring of soil and water quality using sensors • Guided Bucharest City Tour
	June 17, 2026	• Field trip at the Laboratory for Soil Erosion and Conservation Aldeni-Buzău • Workshop lunch • Trip to Muddy Volcanoes • Return to Bucharest
	June 18, 2026	• Laboratory determination of soil physical properties from the Moara Domnească Didactic Farm • Modern Technologies in Geospatial data collection • Lunch break (1.5 hours free time) • Droughts and Floods - challenges and adaptation measures to reduce the impact on socio-economic sector - location: National Administration of Meteorology
	June 19, 2026	• Case studies in work groups • Lunch break (1.5 hours free time) • Closing ceremony