Courses list for Sustainable Development and Environment Management
First year

Code	Course name		Degree level	Year of study	Sem.	Course type	Language	Tutorial basis (yes/no; language)
NME8011	Fundamentals of sustainable development	5	Master	1st	1st	Mandatory	English	No
Course description	The Fundamentals of Sustainable Development aims to initiate students to understand theoretical and practical aspects of SD; it also provides general knowledge of SD. The students must be able to reinforce the understanding of the specific concepts used in the field of sustainable development, to identify the legal basis of SD, to know the responsibilities of the institutional bodies committed to sustainable development, to identify the property rights regimes, to acquire knowledge about environmental justice and about green side of EU policies through the application of the principle of environmental integration.							
Learning Outcomes	By the end of the course, the students will be able to understand basic concepts of Sustainable Development, the environmental, social, economic dimensions and the story of SD. They will acquire the ability to provide tools to facilitate the participation of and partnerships with various stakeholders in the public and private sectors through dialogue and setting of priorities, to facilitate thinking about ways to integrate sustainability principles in policymaking process, to discuss the conflicts which are involved in the SD concept on the national as well as on the global scale and the (dis-)advantages of instruments for SD. Also, they will understand the SD challenge for companies, their responsibility and their potential for action.							
Evaluation	Examination 50% + project 30% + Participation in discussions / debates, preparation of the tasks. Students are rewarded for bringing up more challenging ideas and for trying to deal with them collaboratively with their colleagues. 20%							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/An-I_DSMM_Fundamentals-of-Sust.-Develop._PetrescuMag-an1_sem.1-DSMM.pdf							
NME8111	Integrated environmental management systems	6	Master	1st	1st	Mandatory	English	No
Course description	The course aims to provide students knowledge and skills necessary to design, implement, control and continuous improvement of environmental management of socio-economic organizations. Therefore, the course is focused on understanding the main reasons for the implementation and operation of environmental management systems (EMS) and quality assurance (QA), understanding the main features of ISO 14001 and EMAS, including key differences between these, understanding the main elements in environmental audits and their importance in continuous performance and quality improvement.							
Learning Outcomes	Topics covered are intended to make students aware of the thematic environmental management systems and quality assurance, providing them with a foundation of knowledge and skills useful in analyzing and interpreting organizational realities and socio-economic environment and the development of skills systematization of information, the preparation and implementation of necessary documentation and SAC EMS implementation. Also students will acquire the ability to carry out consultancy skills valued by employers representative for the program.							
Evaluation	Evaluation of the project 25% + Written exam 75%							
Additional information	http://enviro.ubbcluj.ro/studenti-master/dezvoltarea-sustenabila-si-managementul-mediului-invatamant-cu-frecventa/							
NME8511	GIS analysis for environmental studies	5	Master	1st	1st	Mandatory	English	No
Course description	The general objective of the discipline is to prepare students in the development of a general knowledge regarding the concepts and methods applied in the field of GIS and space statistics. At the end of the semester, students will acquire the ability to use a GIS software program and the basic functions built into							

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	GIS programs. They will also gain knowledge of creating a map, knowledge of the types of projections and coordinate systems, but will also know the concept of spatial analysis and the use of different geoprocessing.							
Learning Outcomes	Through the course students will acquire basic knowledge in the field of GIS and spatial statistics, they will know how to use computer programs to represent the processes and phenomena in the environment on thematic maps. They will also gain the ability to use the GPS tool in the field, to write scientific papers in the field of environment, but also the ability to use methods of field investigation of environmental factors.							
Evaluation	Written exam 30% + practical project + activity 15%							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/An-I_GIS_Malos.pdf							
NME8311	Risk assessment and management of hazardous chemical substances	6	Master	1st	1st	Mandatory	English	No
Course description	The general objective of the discipline is to help the students achieve assessment and risk control of hazardous chemical substances, reach agreement regarding the use of substances and preparation. The discipline focuses on: knowledge achievement for classification, labelling and packing of substances and mixtures and for evaluation and risk control of existent substances.							
Learning Outcomes	Participants to the course will achieve the level of knowledge necessary in order be able to understand and interpret a technical security report for hazardous chemical substances. Students will be acquainted with the most recent regulations, recommendations and trends in risk of hazardous chemical substances assessment. The students will understand the principles and implementation of REACH regulations.							
Evaluation	Written exam 80% + Evaluation of the project (documentation and demonstration) 20%							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/An-I_-Eval-si-manag-riscurilor-subst-ch-peric_engleza.pdf							
NME8411	Fire and explosion risk assessment	6	Master	1st	1st	Mandatory	English	No
Course description	The general objective of the discipline prepares the students to develop a risk study related to fire and explosion in the process industries. By the end of the semester, the students must know the necessities of a fire and risk assessment procedure, theory and practice of fire and explosion risk assessment, and how to use methods and techniques for quantitative fire and explosion risk assessment.							
Learning Outcomes	Participants to the course will achieve the level of knowledge necessary in order be able to understand the concepts of technological hazards and risks, related to fire and explosion hazards in the process industries, to use specific risk analysis methods and software. Also, the students will acquire abilities for ATEX zoning for systems with gas and/or dust and they will be able to understand ATEX marks and equipment.							
Evaluation	Colloquium: Questions from theory 50 % + Colloquium: Questions from theory 50 %							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/An-I_Evaluarea_riscurilor_de_incendii_%C2%A1i_explozii_Master-DSMM_2019-2020.pdf							
NME8012	Environmental legislation and politics at international level	6	Master	1st	2nd	Mandatory	English	No
Course description	The course aims to provide a thorough introduction to the EU and international environmental law and to provide general knowledge related to concepts and methods applied in the area of environmental legislation.							
Learning Outcomes	The goal of the course is to enlarge and reinforce the understanding of the specific concepts used in the field of environmental law and environmental policy analysis. The course enables the graduates to work							

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	for international and national agencies/ministries/companies for positions involving formulation, management and assessment of environmental policies							
Evaluation	Seminar activity 20% + Research project 30% + final examination 50%							
Additional information	http://enviro.ubbcluj.ro/studenti-master/dezvoltarea-sustenabila-si-managementul-mediului-invatamant-cu-frecventa/							
NME8112	Global climate changes	6	Master	1st	2nd	Mandatory	English	No
Course description	Global climate change is a topic intensively debated by the scientific international community, but also by the public at large. The proposed course offers to the students the necessary knowledge to understand how the climate change is pursuing, as well as its mechanisms. The arguments supporting the different theories connected to climate change are discussed. The potential effects of climate change on the society, and the adaptation and mitigation actions are assessed. Also, the course focuses on understanding the climate system and its modifications at a planetary scale and improving students' capacity to analyze complex systems and to compare various theories based on arguments.							
Learning Outcomes	By the end of the course, the students will acquire the ability to understand the functioning and the variability of the climate system, the anthropogenic influence on the climate system and the various current theories on climate change. The students will be capable to make action plans for preventing climate change and mitigating its effects.							
Evaluation	Exam 60% + Continuous Evaluation 40%							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/AN-I_Fisa-disciplinei_Schimbari-climatice-globale_2019_20EN.pdf							
NME8212	Integrated management of water resources and wastewater treatment procedures	5	Master	1st	2nd	Mandatory	English	No
Course description	The course gives insights in the theoretical and methodological elements underlying the notion of 'integrated water resources management' (IWRM), with focus on concepts and tools for sustainable planning and management of water resources. This discipline introduces the problem-solving concepts and tools commonly used in environmental engineering, and it presents the fundamental operations and processes that are used in environmental engineering, with a focus on water and wastewater treatment processes. This course provides a broad background on the occurrence, use, management, and conservation of water and water resources. The students must understand physical hydrology and the hydrologic basis of water resources, explain what wastewater is and describe how it is characterized. They should know to describe the objectives and importance of (i) physical treatment, (ii) biological treatment, and (iii) chemical treatment in the handling of municipal wastewater. Students will be able to analyze wastewater data and develop a preliminary design of the primary, secondary, advanced, and sludge treatment processes for a wastewater treatment plant.							
Learning Outcomes	Participants to the course will achieve the level of knowledge necessary in order be able: to explain the concept and principles of Integrated Water Resource Management (IWRM), describe the methodologies and tools for practicing IWRM, to analyze the EU WFD as an example of IWRM in practice, to work with integrated water management projects and get a fair insight in in the EU WFD, to describe different methods for wastewater treatment and environmental effects of wastewater, to apply methods from mathematical modelling and simulation tools, to grasp the microbiological processes in the activated sludge process, to account how automatic control is used to optimise the waste water treatment.							
Evaluation	Written exam 75% + Evaluation of the project (documentation and demonstration) 25%							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/An-I_Managementul-integrat-al-resurselor-de-ap%C4%83-%C8%99i-procedee-de-depoluare_NME8212_Master-DSMM-2019-2020_EN.pdf							

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NME8312	Integrated management of natural and technological risks	5	Master	1st	2nd	Mandatory	English	No
Course description	This course presents the natural risk management methodology and emergency situation caused by these risks, the legal framework for the specific measures and activities in the management procedure as well as the institutional structures and specific measure for the mitigation of the risks. The discipline focuses on developing an environmental risk study. This discipline studies the risk management terminology, methods and techniques used in the risk management, the stages in the risk management and the specific actions, the environmental risk or impact study, and the techniques and procedures for hazard identification, qualitative and quantitative environmental risk analysis.							
Learning Outcomes	Participants to the course will achieve the level of knowledge necessary in order be able to understand the concepts of natural and technological hazards and risks. They will acquire knowledge of specific integrated activities, measures and tasks, legally organized and realized, with the aim of prevention and mitigation of natural and technological disasters, knowledge of institutional structures and actors in the domain of emergency situations generated by natural and technological hazards. The students will be able: to understand the specific measures to be taken in case of natural and technological risks, to implement and use the risk management process, to use specific risk analysis methods, to develop specific environmental studies: hazard identification, risk analysis.							
Evaluation	Written exam (2 hours) 80 % + Score 5% + Project presentation (10 minutes/student) 15 %							
Additional information	http://enviro.ubbcluj.ro/wp-content/uploads/2015/10/An-I_-Fisa-disciplinei-DSMM-1-Stefanescu_Management-Riscuri-Nat-si-Teh_2019.pdf							