



No. _____ of _____

USAMV form 0107040112

SUBJECT OUTLINE**1. Information on the programme**

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca
1.2. Faculty	Agriculture
1.3. Department	Environmental and Plant Protection
1.4. Field of study	Environmental Engineering
1.5. Cycle of study¹	Bachelor
1.6. Specialization/ Study programme	Environmental Engineering
1.7. Form of education	Full time

2. Information on the discipline

2.1. Discipline name		Global Climate Change						
2.2. Course coordinator				Prof. Dr. Marian PROOROCU				
2.3. Seminar/ laboratory/ project coordinator				Prof. Dr. Marian PROOROCU				
2.4. Year of study	IV	2.5. Semester	II	2.6. Evaluation type	E	2.7. Discipline status	Content ²	S
							Compulsoriness ³	DS

3. Total estimated time (teaching hours per semester)

3.1. Hours per week – full time programme	4	out of which: 3.2. lecture	2	3.3. seminar/ laboratory/ project	2
3.4. Total number of hours in the curriculum	40	out of which: 3.5. lecture	20	3.6. seminar/laboratory	20
Distribution of the time allotted					hours
3.4.1. Study based on books, textbooks, bibliography and notes					10
3.4.2. Additional documentation in the library, electronic platforms and field experiences					10
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4. Tutorials					5
3.4.5. Examinations					5
3.4.6. Other activities					
3.7. Total hours of individual study	40				
3.8. Total hours per semester	80				
3.9. Number of credits⁴	3				

4. Prerequisites (if applicable)

4.1. curriculum-related	
4.2. skills-related	.

5. Conditions (if applicable)

5.1. for the course	The course is interactive, the presentations are in the form of power points or case studies. Students can ask questions about the content of the exhibition. The university discipline requires the observance of the start and end time of the course. No other activities are tolerated during the lecture, mobile phones should be closed.
5.2. for the seminar/ laboratory/ project	In practical work it is compulsory to consult the practical guide, each student will carry out an individual activity. This will consist in drawing up the environmental decommissioning to obtain the greenhouse gas

8.2. PRACTICAL WORKS Number of hours – 20	Teaching methods	Observation
1. Preparation of the documentation in order to obtain a greenhouse gas authorization - request. 2. Preparation of the documentation in order to obtain the authorization of GHG - non-technical summary. 3. Drawing up of plans of measures regarding monitoring and reporting of greenhouse gas emissions. Elaboration of the greenhouse gas authorization. 4. Estimated calculation of the price of greenhouse gas emissions (Trading scheme). 5. Presentation of the documentation elaborated in order to obtain a greenhouse gas authorization. 6. Study visit: The Iron Gates Hydropower System I: - Implementation of the flexible mechanisms of the Kyoto Protocol, obtaining energy from renewable sources.	Case studies Preparation of the documented Mathematical calculation of CO2 emissions Presentation of the documentation	1 lab work 1 lab work 1 lab work 1 lab work 5 lab works
Compulsory bibliography: 1. Directive 2003/87 / EC on the establishment of the greenhouse gas emission allowance trading scheme 2. Climate apocalypse and its causes, Muresan C, 2006, Cartimpex Ed., Cluj-Napoca 3. Implementation of the Kyoto Protocol and the European Union Directives on Emission Trading in Romania, Marian PROOROCU - Ed. Accent, ISBN: 973-8915-25-2, Cluj-Napoca, 120p, 2006 4. Report on the state of environmental factors, head of Climate Change, 2017, www.anpm.ro		
Optional bibliography: 1. Methodology regarding the allocation of greenhouse gas emission certificates.		

9. Corroborating the discipline content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

For a continuous updating of the course information and seminars, the subject holder participates in national and international conferences on this topic, while also successfully collaborating with the other specializations within USAMVCN. At the same time, it maintains a close connection with the complementary authorities for environmental protection, in order to improve the quality of the courses.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
10.4. Course	<ul style="list-style-type: none"> - knowledge of the general notions regarding climate change; - exemplifying the causes and effects of climate change; - the acquisition of knowledge regarding the flexible mechanisms of the Kyoto Protocol; - Acquiring the necessary knowledge regarding climate scenarios; - knowledge of the methods of adaptation to climate change. 	summative(E)	70%
10.5. Seminar/Laboratory	<ul style="list-style-type: none"> - Preparation of the documentation for obtaining the greenhouse gas authorization; - Calculation of CO2 emissions from different branches/industrial activities; - Presentation of the measures plan to reduce greenhouse gas emissions; - Presentation of a report on the topic of Climate Change. 	<ul style="list-style-type: none"> -Analysis of the documentation and the report, as well as the presentation mode; -Testing by applying some GHG calculation problems. 	30%

10.6. Minimum performance standards

Mastery of scientific information transmitted through lectures and practical papers at an acceptable level.
The preparation of the documentation, its presentation and the report is a condition of promotability.
Calculation of CO2 emissions from different branches / industrial activities is a condition of promotability.

- 1 Cycle of studies - choose one of the three options: Bachelor/Master/Ph.D.
- 2 according to the educational plan
- 3 Discipline status (compulsoriness) - choose one of the options - **DI** (compulsory discipline) **DO** (optional discipline) **DFac** (facultative discipline).
- 4 One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Filled in on
04.09.2019

Course coordinator
Prof. Dr. Marian PROOROȚU

Laboratory work/seminar coordinator
Prof. Dr. Marian PROOROȚU

Approved by the
department on
05.09.2019

Head of the Department
Prof. Dr. Ioan OROIAN