UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
Facultatea de Agricultură
Calea Mănăştur 3-5, 400372, Cluj-Napoca, România
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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	**II Plant culture**
1.4. Field of study	**Environmental Engineering**
1.5. Cycle of study[1]	**Bachelor**
1.6. Specialization/ Study programme	**Environmental Engineering**
1.7. Form of education	**Full time**

2. Information on the discipline

2.1. Discipline name				**Climatology**				
2.2. Course coordinator				Lecturer PhD. Sorin Vâtcă				
2.3. Seminar/ laboratory/ project coordinator				Lecturer PhD. Sorin Vâtcă				
2.4. Year of study	1	2.5. Semester	1	2.6. Evaluation type	Summative Colloquium	2.7. Discipline status	Content[2]	DD
							Compulsoriness[3]	DI

3. Total estimated time (teaching hours per semester)

3.1. Hours per week – full time programme	**2**	**out of which: 3.2. lecture**	**1**	**3.3. seminar/ laboratory/ project**	**1**
3.4.Total number of hours in the curriculum	**28**	**out of which: 3.5. lecture**	**14**	**3.6.seminar/laboratory**	**14**

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	8
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays	10
3.4.4. Tutorials	-
3.4.5. Examinations	4
3.4.6. Other activities	

3.7. Total hours of individual study	32
3.8. Total hours per semester	60
3.9. Number of credits[4]	2

4. Prerequisites (if applicable)

4.1. curriculum-related	Physics, Chemistry, Geography
4.2. skills-related	Basic concepts of mathematical calculation and interpretation of different graphic materials (maps, sketches, graphs)

5. Conditions (if applicable)

5.1. for the course	The course is interactive, students can ask questions regarding the content of the course. Academic discipline requires compliance with the start and end of the course. We do not allow any other activities during the lecture and mobile phones will be turned off.
5.2. for the seminar/ laboratory/ project	The laboratory is equipped with a video projector and laptop with internet

	connection as well as with different devices. Each student has an obligation to be actively involved.

6. Cumulated specific competences

Professional competences	The knowledge and determination of the main quantitative and qualitative characteristics of the weather-climatic elements and the understanding of the main processes and phenomena from the atmosphere and the relationships between them. Understanding the distribution in time and space of weather-climate parameters and the ability to put into practice the acquired knowledge; The ability to design synthesis studies, to analyze and interpret information related to the atmospheric environment.
Transversal competences	The knowledge acquired will be useful for a better understanding of the problems presented in other courses in the Environment domain. The ability to analyze and synthesize efficiently and to solve complex situations. Availability for work in interdisciplinary teams.

7. Discipline objectives (based on the cumulated specific competences)

7.1. General objective	Familiarization of the future specialists in the field of environmental engineering with the notions of climatology, as well as of the role that the atmosphere has in the system represented by the environment. It is necessary to clarify and know the latest theories, concepts, principles and methods of research used in climatology, regarding climate variability, global warming and climate change at global and local level.
7.2. Specific objectives	The course will provide the necessary knowledge of development directions in climatology, Main climatology factors and components of the global climate system, the climatic zones and geographic types of climate in order to support with meteorological information different researches and projects of technical-scientific character or applied.

8. Content

8.1. COURSE **Number of hours –14**	Teaching methods	Observation 1 lecture = 1 hour
Meteorologia. Aspecte generale.	Lecture	1 lecture
Atmosfera. Formare, structură, compoziţie, sisteme de observaţie.		2 lectures
Radiaţia solară.		1 lecture
Temperatura.		1 lecture
Precipitaţiile.		1 lecture
Presiunea atmosferică.		1 lecture
Prognoza meteorologică.		1 lecture
Climatologie. Noţiuni introductive.		1 lecture
Factori care modifică climatul.		1 lecture
Zonalitatea climatică.		1 lecture
Clasificarea zonelor climatice.		1 lecture
Colocviu.		2 lectures

8.2. PRACTICAL WORKS **Number of hours – 14**	Teaching methods	Observation 1 lab work (2 hours/work)
Methods and tools for measuring the weather elements	Explanation,	3 lab work
Processing of measurement results.	Demonstration,	2 lab work
Cartographic representation of weather-climatic elements	Experimental	1 lab work
Verification of knowledge. Colloquium	study	1 lab work

Compulsory bibliography:

1. Course note
2. Berbecel, O., 1970, Resursele climatice ale României, Editura solară
3. Rodica Povară, 2009, Climatologie generală, Editura Fundaţiei România de mâine, Bucureşti
4. Ciplea, L., Ciplea Al., 1978, Poluarea mediului ambiant, Editura tehnică, Bucureşti
5. Neacşa, O., Climatologie şi meteorologie, Editura didactică şi pedagogică, Bucureşti

* * * *Atlasul climatologic al R.S.R., 1979, Institutul de Meteorologie şi Hidrologie, Bucureşti*

Optional bibliography:

Barry, R., G., Chorley, R., J., 1998, Atmosphere, Weather and Climate, Seventh Edition, Routledge, London and New York.
Berger, A., 1992, Le climat de la Terre, De Boeck-Wesmael, Bruxelles.

Bogdan, Octavia, 2009, Bazele teoretice ale Meteorologiei, Editura Universităţii „L. Blaga", Sibiu.
Ciulache S., Ionac Nicoleta, 2003, Dicţionar de Meteorologie şi Climatologie, Editura Ars Docendi, Bucureşti.
Fărcaş, I., 1990, Meteorologie-Climatologie. Structura şi dinamica atmosferei. Note de curs, Universitatea din Cluj.
Moldovan F., 2003, Fenomene climatice de risc, Editura Echinox, Cluj-Napoca.
Pop Gh., 1988, Introducere în Meteorologie şi Climatologie, Editura Ştiinţifică şi Enciclopedică, Bucureşti.
Sorocovschi, V., 2009, Meteorologie şi Climatologie, Editura Casa Cărţii de Ştiinţă, Cluj-Napoca.
* * * 2008, *Clima României*, ANM, Editura Academiei Române, Bucureşti.
* * * Reţeaua *Internet*: www.wmo.ch, www.wetterzentrale.de

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

In order to identify new ways of modernizing and continuously improving the teaching method and the content of the courses, with the most current issues and problems, the teachers participate in symposiums and scientific manifestations. The content of the discipline is designed to deal with many problems specific to the practical activity, so that the graduates can fit into different fields of activity related to the environment.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
10.4. Course	Degree of knowledge of weather-climatic processes and manifestations Understanding the phenomena and following them in the environment;	Colloquium Summative(E)	70%
10.5. Seminar/Laboratory	Acquiring the main specific investigation methods and their applications	Written test verification	30%
10.6. Minimum performance standards			
Mastery of scientific information transmitted through lectures and practical papers at an acceptable level. Obtaining the passing grade through the arithmetic mean of the tests during the course is a condition to pass the exam..			

[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
4.09.2019

Course coordinator
Lecturer PhD Sorin Vâtcă

Laboratory work/seminar coordinator
Lecturer PhD Sorin Vâtcă

Approved by the department on
5.09.2019

Head of the Department
Professor. PhD Marcel Duda