



Number. _____ from _____

Form UASVM -CN- 0107020222

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 and plant protection
1.5. Cycle Education ¹⁾	Bachelor
1.6. Specialization / Study program	Environmental Engineering
1.7. Form of education	IF

2. Information on the discipline

2.1. Name of the discipline		MATHEMATICAL ANALYSIS						
2.2. Holder of course activities				Professor. Florica Matei Ph.D.				
2.3. Holder of seminar / laboratory activities / project				Lecturer Cristian Mălinaș Ph.D				
2.4. Year of study	I	2.5. Semester	I	2.6. Evaluation type	Sumative	2.7. Discipline status	Content ²⁾	DF
							Compulsoriness ³⁾	DI

3. Total estimated time (teaching hours per semester)

3.1. Number of hours per week - frequency form	3	Out of which: 3.2. lecture	2	3.3. seminar / laboratory / project	1
3.4. Total hours of the educational plan	42	Out of which: 3.5. lecture	28	3.6. seminar / laboratory	14
Distribution of the time fund					hours
3.4.1. Study after manual, lecture support, bibliography and notes					30
3.4.2. Additional documentation in the library, on specialized electronic platforms and in the field					8
3.4.3. Preparation of seminars / laboratories / projects, topics, reports, portfolios and essays					10
3.4.4. Tutorials					6
3.4.5. Examinations					4
3.4.6. Other activities					
3.7. Total hours of individual study	58				
3.8. Total hours per semester	100				
3.9. Number of credits ⁴⁾	4				

4. Preconditions (where applicable)

4.1. of curriculum	Notions learned in high school
4.2. of skills	The student must have knowledge regarding mathematical calculations.

5. Conditions (if applicable)

5.1. for the course	The course is interactive, students can ask questions about the content exposure. The university discipline requires the observance of the start and end time of the course.
5.2. for the seminar / laboratory / project	At the seminars it is compulsory to go through the teaching material that contains each one theme in part. The academic discipline is imposed during the entire duration of the works.



6. Cumulated specific competences

Professional skills	<p>1. Knowledge, understanding, explanation and interpretation. Acquisition by students of mathematical methods that have applications in mechanics and environmental engineering. Development of students' logical thinking. Educating students in the spirit of more realistic approaches to problems in mechanics, environmental engineering. Use of mathematical tools in an interdisciplinary context. Design of mathematical models for describing characteristic environmental phenomena.</p> <p>2. Instrumental applicative – the acquisition by the students of the applied instrumental methods: explanation, debate, case study, problematization, simulation of situations, working methods in group and individual, methods of thinking development and study of bibliography.</p> <p>3. Attitude - manifesting positive and responsible attitudes towards the mathematical field that helps investigating economic or engineering problems in the environment field.</p>
Transversal Competences	<p>To understand the connections between the specialized factors, mathematics and the phenomena that are suitable for modeling.</p> <p>To develop the skills to work effectively with people with different personalities and backgrounds.</p> <p>To have competences for analyzing the utility of different analytical and differential geometry</p>

7. Discipline objectives (based on the grid of specific skills accumulated)

7.1. General objective of the discipline	<p>C1 Explain the mechanisms of processes and effects of anthropic or natural origin that determine and influence the pollution of the environment. Description and application of concepts, theories and practical methods for determining the quality of the environment. Applying basic scientific knowledge in defining and explaining concepts related to environmental protection issues in agriculture. Choosing the principles and establishing the appropriate basic methods for solving problems.</p>
7.2. Specific objectives	<p>Formation of the computational skills necessary for mastering mathematical reasoning; understanding the intrinsic theory of mathematics using practical examples; appropriate; applying theoretical concepts exposed to the course in solving specific problems and modeling processes.</p>

8. Contents

8.1. Course Number of hours - 28	Teaching methods	Remarks
1. Real functions of a variable: the notion of function, classification of functions, operations, strings, limit of a function, continuous functions. Exemplify the concepts presented using the MAPLE application	Lecture - Exemplification	4 lectures
2 Derivatives and differentials: derivative of a function, series Their applications in environmental engineering. Exemplify the concepts presented using the MAPLE application	Lecture - Exemplification	4 lectures
3. Functions of several variables: partial derivatives, local extremes, differentials, Taylor's formula, adjustments and interpolations. Their applications in environmental engineering. Exemplify the concepts presented using the MAPLE application.	Lecture - Exemplification	6 lectures
4. Integral calculation: primitive of a function, methods of integration, integration of some classes of functions, definite integral, applications of integral calculus. Their applications in environmental engineering. Exemplify the concepts presented using the MAPLE application.	Lecture - Exemplification	6 lectures
5. Double integrals: their applications in engineering environment. Exemplify the concepts presented using MAPLE application	Lecture - Exemplification	8 lectures



8.2. SEMINAR Number of hours – 14	Teaching Methods	Remarks
1. Real functions of a variable: the notion of function, classification of functions, operations, strings, limit of a function, continuous functions.	Individual study	2 seminars
2. Derivatives and differentials: derivative of a function, series.	Individual study	2 seminars
3. Functions of several variables: partial derivatives, local extremes, differentials, Taylor's formula, adjustments and interpolations.	Individual study	2 seminars
4. Integral calculation: primitive of a function, methods of integration, integration of some classes of functions, definite integral, applications of integral calculus	Individual study	2 seminars
5. Double integral	Individual study	2 seminars
<i>Bibliography Required:</i> 1. Course notes; 2. Ioana Pop, Rodica Sobolu, Florica Matei, Cristina Rus, Maria Micula, Elemente de analiză matematică, Ed. AcademicPres, Cluj-Napoca, 2009;		
<i>Optional bibliography:</i> 1. Duca D.I., Duca E.: Analiză matematică, Culegere de probleme, Ed. Gil, Zalău, 1999; 2. Blaga P., Mureşan A.S.: Matematici aplicate în economie, vol. I și II, Ed. Transilvania Press, Cluj- Napoca, 1996;		

9. Corroborating the contents of the discipline with the expectations of representatives of epistemic communities, professional associations and representative employers in the field related to the program

The content of the discipline is in accordance with what is studied in other university centers in the country and abroad. For a better adaptation to the labor market requirements of the content of the discipline, meetings were held with representatives of the business environment.

10. Evaluation

Activity type	10.1. Evaluation criterias	10.2. Methods of evaluation	10.3. Weight in the final grade
10.4. Course	Knowing the types of problems presented at the course and exemplified at seminar - written exam	Written and oral exam	70%
10.5. Seminar / Laboratory	2 checks during the semester - topics similar to the seminar issue	Check in progress	30%

10.6. Minimum standard of performance

Mastery of scientific information transmitted through lectures and practical papers at an acceptable level. Obtaining the passing grade.

¹ The study cycle - one of the variants is chosen - Bachelor / Master / Doctorate

² The regime of the discipline (content) - for the license level one of the variants is chosen - DF (fundamental discipline), DD (discipline in the field), DS (specialized discipline), DC (complementary discipline).

³ The regime of the discipline (compulsory) - one of the variants is chosen - DI (compulsory discipline) DO (optional discipline) DFac (optional discipline).

⁴ A credit is equivalent to 25-30 hours of study (teaching activities and individual study)

Date completed
05.09.2019

Course holder
Professor Florica Matei PhD.

Holder of laboratory works / seminars
Lecturer Mălinaş Cristian PhD.

Date of approval department
in the department
05.09.2019

Department Director
Professor, Ioan Croian PhD.