

<b>Universitatea din Oradea</b>	<b>PROCEDURA pentru inițierea, aprobarea, monitorizarea și evaluarea periodică a programelor de studii</b>	<b>COD: SEAQ PE – U. 01</b>						
			<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
			<b>Aprobat în ședința de Senat din data: -- 03.03.2014</b>					

## Anexa 6

### DISCIPLINE FILE

#### 1 Program data

1.1 Institution	<b>UNIVERSITY OF ORADEA</b>
1.2 Faculty	<b>Environment Protection</b>
1.3 Department	<b>Animal Husbandry and Agritourism</b>
1.4 Domeniul de studii	<b>Engineering and Management</b>
1.5 Studies cycle	<b>Licence</b>
1.6 Study Program / Qualification	<b>Engineering and Management in Public Nutrition and Agrotourism /Engineer</b>

#### 2. Datas about discipline

2.1 Name of discipline	<b>APPLIED PHYSICS AND AGROMETEOROLOGY I</b>						
2.2 Professor course	Lecturer Olimpia Smaranda Mintaş						
2.3 Professor seminars/projects	Lecturer Olimpia Smaranda Mintaş						
2.4 Year of study	<b>1</b>	2.5 Semester	<b>1</b>	2.6 Evaluation type	<b>E</b>	2.7 The discipline regime	<b>O</b>

(I) Impose; (O) Optional;

#### 3. Total estimated time (hours per semester of teaching activities)

3.1 Number of hours per week	<b>4</b>	From which: 3.2 course	<b>2</b>	3.3 seminar/laborator/project	<b>2</b>
3.4 Total hours of the curriculum	<b>56</b>	From which 3.5 course	<b>28</b>	3.6 seminar/laborator/project	<b>28</b>
3.7. Distribution of Time Fund					ore
Study after manual, course support, bibliography and notes					10
Additional documentation in the library, on the specialized electronic platforms and on the field					10
Training seminars / laboratories, themes, papers, portfolios and essays					23
Tutorial					10
Examinations					4
Other activities.....					10
3.8. Total hours of individual study	<b>56</b>				
3.9 Total hours per semester	<b>112</b>				
3.10 Number of credits	<b>4</b>				

#### 4. Preconditions (if necessary)

4.1 of curriculum	-
4.2 of competences	-

#### 5. Conditions (if necessary)

5.1. for course	Lecture room with blackboard, laptop and videoprojector
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5.2. for seminar / laboratory / project	Lecture room with blackboard, laptop and videoprojector
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6. Specific skills accumulated	
Professional skills	<p>C1.2 Use of basic knowledge specific to fundamental disciplines to explain and interpret theoretical results and phenomena or aspects specific to the field of engineering and management in public catering and agrotourism</p> <p>C1.3 Application of theorems, principles and fundamental methods in order to solve, in conditions of qualified assistance, the problems specific to the field of engineering and management in public alimentation and agrotourism</p>
Competente transversale	<p>CT3</p> <p>Awareness of the need for continuous training; efficient use of learning resources and techniques for personal and professional development</p> <p>Identifying opportunities for continuous training and efficient use, for one's own development, of information sources and of communication resources and assisted professional training (Internet portals, specialized software applications, databases, online courses, etc.) both in Romanian, as well as in a language of international circulation</p>

## 7. Discipline objectives

7.1 General objective	<ul style="list-style-type: none"> <li>- Acquiring theoretical and practical knowledge on physical phenomena encountered in living structures;</li> <li>- Knowledge of physical phenomena that occur in the atmosphere and their interdependence. Studying the influence of conditions meteorological and climatic factors on plant growth and distribution.</li> <li>- Creating a rapid system for assessing the situations created by weather conditions on plants.</li> <li>- All these issues are addressed using the methods, principles and laws of physics.</li> </ul>
7.2 Specific objectives	<ul style="list-style-type: none"> <li>- Developing the ability to understand the physical phenomena that take place in living systems and biotechnological processes.</li> <li>- Understanding the research methods of the physical phenomena from the living systems and the biotechnological processes.</li> <li>- Promoting and developing interest in the technical disciplines underlying food engineering</li> </ul>

## 8. Content\*

8.1 Course	Teaching methods	Nr. of hours /
1. Introduction to Environmental Biophysics. The elementary composition of living matter. Physical factors in the environment.	Lecture. debate	2
2. Living biological system - Cell - Laws of	Lecture. debate	2

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conservation in the environment and at the cellular level		4
3. Notions of thermodynamics and molecular physics: Thermodynamic system, thermodynamic equilibrium, state parameters. Internal energy, heat, work, enthalpy, calorimetry. Principles of thermodynamics.	Lecture. debate	4
4. Notions of liquid physics Fluid statics: hydrostatic pressure, pressure units, Pascal's law, Archimedes' law. Fluid dynamics: laminar flow. Bernuolli's equation, the Poiseuille-Hage equation, the turbulent flow. Viscosity, viscometers. Surface tension, Laplace's equation, surfactants.	Lecture. debate	4
5. Water and aqueous solutions: Water molecule. Water structure. Physical and chemical properties. The influence of Solvents on the structure of water. Water in living organisms: classification, content and role. Solutions and dispersions. Expression of concentrations. Dissolution equilibria.	Lecture. debate	2
6. Transport phenomena: Diffusion: Fick's equations, Nernst equilibrium, Nernst-Planck equilibrium, membrane potential. Osmosis: phenomenon, osmotic pressure, laws of osmotic pressure, determination of osmotic pressure. Applications in biology	Lecture. debate	2
7. Electromagnetic fields in the environment. Electrical phenomena at the cellular level. Electrical polarization of membranes.	Lecture. debate	2
8. Electromagnetic radiation Non-ionizing radiation. Ionizing radiation.	Lecture. debate	2
9. The interaction of the electromagnetic field with living systems. Dimensions and dosimetric units. Biological dose.	Lecture. debate	2
10. Pollution due to electromagnetic fields.	Lecture. debate	2
11. Sound waves. Reception mechanisms, sound transmission. The effect of noise on the human body.	Lecture. debate	2
<b>Bibliography</b> 1. P.T. Frangopol, Biophysics-Current Problems, Edimpex-Speranta Publishing House, Bucharest, 1992. 2. A.I. Popescu, Fundamentals of medical biophysics, All Publishing House, Bucharest, 2001. 3. D.G. Mărgineanu, M.I. Isac, C. Tarba, Biophysics, Ed. Didactică Pedagogică, Bucharest 1980. 4. Anca Dumitrescu - Communication of the risk for health generated by the environment, Ed. Of the Institute of Public Health Bucharest, 2000 5. G. Cristea, Biophysics with medical orientation, vol.I., ISBN: 973-664-111-2, Univ. Vasile Goldiș, Arad, 2005. 6. Daniela Ciorba, Environmental Biophysics, Cluj-Napoca, EFES, 2008. 7. H. Criveanu, Physics Practical works, Rizoprint Publishing House, Cluj-Napoca, 2001 8. Georgeta Țarălungă, Biophysics and meteorology-Course, Ed. Todesco, Cluj-Napoca, 2003 9. H. Criveanu, Classical and modern agrometeorology, Ed. Digital Data, Cluj-Napoca, 2004		

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10.H.Criveanu, Georgeta Taralunga, Elements of physics and meteorology applied to biosystems, Digital Publishing House Data, 2004  
11. Olimpia Mintas, Biophysics and agrometeorology, course notes, 2011

	Teaching methods	Nr.of hours / Observations
8.2 Seminar	Demonstration, Practical Application	2
1. Means of protection and prevention of accidents in the laboratory. International System of Units in Medicine. Experimental data processing. Notions about error calculation	Demonstration, Practical Application	2
2. Determining the mass and density of bodies	Demonstration, Practical Application	2
3.Determination of the surface tension of liquids	Demonstration, Practical Application	2
4.Determination of the dynamic viscosity coefficient for liquids	Demonstration, Practical Application	2
5.Determination of the specific heat of solids	Demonstration, Practical Application	2
6.Determination of the specific heat of liquids	Demonstration, Practical Application	2
7.Determination of latent mass melting heat	Demonstration, Practical Application	2
8.Measuring the sound with the sound level meter. Hearing threshold and frequency of threshold differentiation in humans. Audiogram.	Demonstration, Practical Application	2
9. Determination of the refractive index of liquids	Demonstration, Practical Application	2
10.Determination of relative air humidity	Demonstration, Practical Application	2
11. Determining the activity of a radioactive source	Demonstration, Practical Application	2
12. Interaction of ionizing radiation with the substance. Determination of half-thickness.	Demonstration, Practical Application	2
13. Dosimetry and radiation protection	Demonstration, Practical Application	2
14. Final laboratory test	Demonstration, Practical Application	2
Bibliography		
1.H.Criveanu, Georgeta Taralunga, Elements of physics and meteorology applied to biosystems, Digital Publishing House Data, 2004		
2.Olimpia Mintas, - Biophysics, Laboratory guide, Oradea, 2010		
3.A.Teusdea - Practical works of biophysics, University of Oradea Publishing House, 2011		

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

The content of the discipline is in line with what is done 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 both with representatives of the business environment and with specialized teachers and physics in pre-university education.

## 10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Wage in final mark
10.4 Course	- the correctness and completeness of the assimilated knowledge; - an overall understanding of the importance of the discipline studied and the connection with the other fundamental disciplines - logical coherence; - the degree of assimilation of the specialized language; - criteria regarding the attitudinal aspects: the interest for the individual study and the professional development	Exam	80%
10.5 Seminar	The way of acquiring the specialized language -capacity to put into practice the theoretical notions acquired	Exam	20%
10.6 Laborator			
10.7 Project			
10.8 Minimal performance standard: Correct solution of calculations and problems of medium complexity, specific to engineering sciences; Responsible realization, in conditions of qualified assistance, of projects for solving some problems specific to the field, with the correct evaluation of the workload, of the available resources, of the necessary completion time and of the risks, in conditions of application of deontological norms and professional ethics in the field, as well as occupational safety and health.			

Data completării

Semnătura titularului\*\* de curs

Semnătura titularului\*\* de seminar/laborator/proiect

10.01.2021

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Lecturer dr.Mintaș Olimpia Smaranda  
(buzasiu@yahoo.com)

Lecture dr.Mintaș Olimpia Smaranda

Data

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Department director signature:

Conf.dr.ing. Maerescu Cristina

Dean signature

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