



No. \_\_\_\_\_ of \_\_\_\_\_

USAMV form 0107010111

**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 Protection and Engineering in Agriculture
1.5. Cycle of study <sup>1</sup>	Bachelor
1.6. Specialization/ Study programme	Environmental Protection and Engineering in Agriculture
1.7. Form of education	Full time

**2. Information on the discipline**

2.1. Discipline name		<b>TOPOGRAPHY</b>						
2.2. Course coordinator				Lecturer Jutka Deak				
2.3. Seminar/ laboratory/ project coordinator				Lecturer Jutka Deak				
2.4. Year of study	I	2.5. Semester	II	2.6. Evaluation type	summative	2.7. Discipline status	Content <sup>2</sup>	BD
							Compulsoriness <sup>3</sup>	CD

**3. Total estimated time (teaching hours per semester)**

3.1. Hours per week – full time programme	3	out of which: 3.2. lecture	2	3.3. seminar/ laboratory/ project	1
3.4. Total number of hours in the curriculum	42	out of which: 3.5. lecture	28	3.6. seminar/laboratory	14
<b>Distribution of the time allotted</b>					hours
3.4.1. Study based on books, textbooks, bibliography and notes					2
3.4.2. Additional documentation in the library, electronic platforms and field experiences					3
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					1
3.4.4. Tutorials					
3.4.5. Examinations					2
3.4.6. Other activities					
3.7. Total hours of individual study	8				
3.8. Total hours per semester	50				
3.9. Number of credits <sup>4</sup>	2				

**4. Prerequisites (if applicable)**

4.1. curriculum-related	Trigonometry, geometry and spatial plan, elementary notions of optics
4.2. skills-related	Proper application of mathematical fundamentals

**5. Conditions (if applicable)**

5.1. for the course	The course is interactive, students may ask questions regarding the content of exposure. Academic discipline requires attention from the beginning to the end of the course and respect for its schedule. There are not allowed any other disturbing activities during the lecture, mobile phones will be shut down.
5.2. for the seminar/ laboratory/ project	Within practical works each student will develop an individual activity with laboratory materials (as described in the laboratory workbook). Academic discipline is imposed during practical works.

## 6. Cumulated specific competences

Professional competences	<p>Interpreting the topographic speciality concepts and terms;          Acquiring concepts, principles and fundamental techniques in mathematics, physics and speciality that allow the understanding and interpretations of topographic issues;          Identifying and describing methods of gathering, analysing and interpreting topographic data          Applying modern methods and techniques of measurements that allow determination of detail topographic points;          Correct use of topographic concepts and instruments for the elaborations of plans and maps: topographic, thematic, construction etc.;</p> <p>Acquiring knowledge needed in compiling topographic and thematic plans, as well as knowledge related to their particularities          Plan landform representation using specific techniques and technologies. Interpreting topographic plans and maps.</p>
Transversal competence	<p>Acquiring theoretical and practical knowledge of the particularities of some techniques and technologies of topographic traverses used in agriculture.</p>

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

7.1. General objective	Acquiring proper topographic knowledge that allows the agriculture engineer to use the speciality appliance, to apply main methods of traverse and to continuously interpret topographic plans and maps.
7.2. Specific objectives	Creating specialists with an intellectual capacity that allows them to transpose the theoretical knowledge in practical problem solving in the organization of agricultural land, in land and cadastral determination, in projecting and traversing works of founding agro-forest plantations, in projecting and executing land improvement works.

## 8. Content

8.1. COURSE	Teaching methods	Observation
<b>Number of hours –28</b>	Lecture	1 lecture = 2 hours
<b>FUNDAMENTAL TOPOGRAPHIC CONCEPTS</b> Definition, object and purpose of topography. Topographic elements of the land. Measurements units used in topography. Topographic scales. The shape and dimensions of the Earth. Reference surfaces and coordinates systems. Cartographic projections- Stenographic 1970. Determination means used in topography.	Lecture	2 lectures
<b>MARKING AND SIGNALLING TOPOGRAPHIC POINTS</b>	Lecture	1 lecture
<b>DIRECT MEASUREMENT OF DISTANCES</b> Instruments for direct measurements of distances and measurements techniques. Planimetric mapping with bind or steel riglet	Lecture	1 lecture
<b>ANGLES MEASURELENTS</b> Instruments and appliances for angles measurements Methods of horizontal and vertical angles measurements	Lecture	1 lecture
<b>INDIRECT MEASUREMENT OF DISTANCES</b> Stadimetric measurement of distances. Distances measurements with electromagnetic waves	Lecture	
<b>PLANIMETRIC MAPPING OF A LAND</b> Mapping methods. Generalities. Classification.	Lecture	2 lectures

<p>Fundamental concepts in planimetrics. Planimetric mapping through traverse method. Planimetric mapping through radial method.</p> <p><b>PLANIMETRIC REPORTING OF A SURFACE</b></p> <p><b>SURFACES DETERMINATION</b> Choosing determination methods: numeric, graphic, mechanic.</p> <p><b>LEVELLING-GENERALITIES</b> Fundamental concepts: level surfaces, absolute elevations; relative elevations. Levelling classification</p> <p><b>GEOMETRIC LEVELLING</b> Principles and classification of geometric levelling. Instruments in geometric levelling: simple and precision. Middle geometric levelling. Ending geometric levelling. geometric levelling methods.</p> <p><b>TRIGONOMETRIC LEVELLING</b> Principle and classification of trigonometric levelling. Appliances and instruments in trigonometric levelling. Small distances trigonometric levelling. Large distances trigonometric levelling. Methods in trigonometric levelling: radial, traversing, combined</p> <p><b>FLAT REPRESENTATION OF THE LANDFORM</b> Generalities. Landform representation through level curves. The relief and its representation through level curves. Landform representation through profiles method.</p> <p><b>MAPS AND PLANS</b> Solvable issues on maps and plans.</p> <p><b>TACHYMETRIC MAPPINGS</b> Principles of tachymetric mapping. Classical and electronic tachymeters. Tachymetric traverse and radial mapping.</p> <p><b>ENGINEERING TOPOGRAPHIC CONCEPTS</b> Land slope: definition and determination. Topographic works for projecting and systemizing landforms. Topographic works for organizational, systematization and enhancing land projects.</p>	Lecture	1 lecture
	Lecture	
	Lecture	1 lecture
	Lecture	
	Lecture	1 lecture
	Lecture	
	Lecture	1 lecture
	Lecture	
	Lecture	1 lecture
	Lecture	

<p><b>8.2. PRACTICAL WORKS</b> Number of hours – 14</p> <p>Study on the topographic appliances and instruments: teodoties, levels; Direct measurements of distances; Angles measurements (horizontal and vertical) and indirect distance measurements; Rectangular coordinates determinations from polar and reverse coordinates; Surface determinations; Plans and maps operations;</p> <p><i>Compulsory bibliography:</i> 1. Deak, Jutka, Course notes 2. Deak Jutka, Ana Ciotlăuș, 2012, Topografie – Caiet de lucrări practice, Editura Bioflux, Cluj-Napoca 3. Oprea Luciana, Ion Ienciu, Goerge Emanuel Voicu, 2009, Topografie I-aplicații, Tipografia Universității “1 Decembrie 1918” 4. Ciotlăuș Ana, 2008, Topografie generală, Editura AcademicPres Cluj-Napoca 5. Boș, N., Iacobescu, O., 2007, Topografie modernă, Editura C.H.Beck București.</p>	Theoretical presentation of practical works	1 lab work (2 hours/work)
	Practical applications in the field or lab	2 lab work
		1 lab work 3 lab work
		2 lab work
		2 lab work 4 lab work

6. Leu, I. Nelu, V. Budiu, V.Moca, C.Ritt, Ana Ciotlaus, Valeria Ciolac, I. Negoescu, 2003. Topografie si generata si aplicata. Cadasatru, Ed. Universul, Bucuresti.
7. Leu, I. Nelu, V. Budiu, V.Moca, C.Ritt, Ana Ciotlaus, Valeria Ciolac, I. Negoescu, 2002. Topografie si cadastru, Editura Universul, Bucuresti.

*Optional bibliography:*

**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**

Aiming to the continuously identify modern ways of improving teaching and discipline content by aligning to the current themes and practical issues, the teachers take part in workshops organized by representatives of the companies producing and distributing topographic appliances.

**10. Evaluation**

Type of activity	10.1. Evaluation criteria	10.2. Evaluation type	10.3. Percentage of the final grade
<b>10.4. Course</b>	-acquireing theoretical fundamental knowledge supporting planimetic and levelling mapping -acquiring constructive parts as well as measurements methods, with different types of planimetric and levelling instruments -acquiring differeing methods of planimetric and levelling land mapping and landform representations -compiling a topographic documentations based on the measurements data	Summative (E) written exam	60 %
<b>10.5. Seminar/Laboratory</b>	Solving a practical exercise	Testing via deliverable papers (homeworks) Written and practical exam – 14 <sup>th</sup> week	40%
<b>10.6. Minimum performance standards</b>			
Proper handling of scientific information acquired by practical examples			

<sup>1</sup> Cycle of studies - choose one of the three options: Bachelor/Master/Ph.D.

<sup>2</sup> Discipline status (content) - for the Bachelor level, choose one of the options: FD (fundamental discipline), BD (basic discipline), CS (specific disciplines-clinical sciences), AP (specific disciplines-animal production), FH (specific disciplines-food hygiene), UO (disciplines based on the university's options).

<sup>3</sup> Discipline status (compulsoriness) - choose one of the options – CD (compulsory discipline) OD (optional discipline) ED (facultative discipline).

<sup>4</sup> One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Filled in on  
04.09.2019

Course coordinator  
Lecturer Jutka DEAK

Laboratory work/seminar coordinator  
Lecturer Jutka DEAK

Approved by the  
department on  
05.09.2019

Head of the Department  
Prof. dr. Ioan OROIAN