

# Topography and Technical Drawings (Ist Year of study, IInd SEMESTER)

**Credit value (ECTS) 4**

## Course category

Domain (Imposed)

## Course holder:

Assist. Prof. Dr. Cristian HUȚANU

## Discipline objectives (course and practical works)

The course aims to make students acquire knowledge on the theory and practice of the current methods and technologies used in terrestrial measurements.

In the practical works it seeks to familiarize students with the technologies and techniques used in general and specialized cadastre works.

The project aims to instill to the students methods of compiling and editing of topographical and cadastral plans; presentation of the basic concepts of general and specialized cadastre; the use of graphical and digital representation of technical drawing.

## Contents (syllabus)

Course (chapters/subchapters)
<b>Basic knowledge:</b> The subject of terrestrial measurements; The role and importance of topographical works; Units of measurement used in surveying; Topographical elements of the land; Topographical calculations; Topographical scales; Topographical maps and plans; Notions of the measurements and errors.
<b>Planimetry:</b> Generalities; Marking and signalization of points; Measuring distances; Measuring angles; Support geodetic networks; Planimetric lifting by traversing method; Planimetric lifting by delisting method; Preparation of topographical plans; the notion of surface; The numerical methods; The mechanical methods; The graphical methods; The tolerances admitted to the calculation of areas.
<b>Leveling:</b> General notions of leveling; Types of leveling; The classic geodetic leveling network; Geometrical leveling; Methods of representation of the relief of the terrain on the maps and topographical plans; The calculation of the slope of the land; A numerical expression of the slope of the land; Calculation of slope land on maps and topographical plans with level curves.
<b>Tacheometry:</b> Tachometric instruments and methods; Classical tacheometric liftings; Autoreducing tacheometric gear; Electronic tacheometric gear.
<b>Cartographic drawing elements:</b> Basic elements of cartographic writing ; Cartographic writing on maps and plans; The form of maps and plans frame; The elements of maps and plans frame; Cartographic editing of topographical plans and maps; The nomenclature of maps and plans sheets; Cartometry problems.

Practical works
<b>Direct measurement of distances:</b> The Alignments landmarking; Classical instruments for the direct measurement of distances; The technique of direct measurement of distances with steel braid; Measuring of a land area with steel braid; Instruments for measuring distances by waves; Measuring distances with laserimeters.

<b>Classic and modern instruments for measuring angles and distances:</b> Considerations and general principles; Classical theodolites and tacheometers; Modern optical theodolites and tacheometers; Electronic tacheometers or total stations; Reading devices of angles.
<b>Measurement of angles and distances with theodolites and tacheometers:</b> Laying the instrument into the station point; Target signals on measuring angles; Measuring horizontal angles; Measuring zenitale vertical angles; Measuring distances on the optical path; Processing of the measurements in the field book.
<b>Tools and methods for geometric leveling:</b> Classic levels with manual orizontalization; Modern levels with automatic orizontalization; Verification and correction of the levels; The settlement of the level at the station point; Making readings on the topographic mira; Geometric levelment of simple means.
<b>Maps and topographical plans:</b> Definition and classification of maps and plans; The dimension of maps and plans form; The elements of maps and plans frame; The nomenclature of the map sheets and plans; Practical applications on maps and plans.

Project
<b>Calculation of planimetric and leveling roading:</b> Technical conditions of construction of planimetric and leveling roading; The field works of planimetric and leveling roading; Calculation works of planimetric and leveling roading.
<b>Calculation of planimetric and leveling delistings:</b> Technical conditions of execution of planimetric and leveling delistings; The field works of planimetric and leveling delistings; Calculation works of planimetric and leveling delistings.
<b>The drawing and drafting of a topographical profile:</b> Determining the quota on the situation plane with level curves; Determining the slope of an alignment on the situation plane with level curves; Drawing of topographical profile of the terrain on the situation plane with level curves.
<b>Calculation of areas:</b> Equipping the topographical plan with the symbols of the categories of use; The numbering of the provisory land register; Calculation of areas on cadastral sectors; Calculation of areas on cadastral parcels; Drawing of cadastral register of parcels.
<b>Calculation of detachments and parcelings:</b> General conditions of detachment and parceling; Numerical parceling calculation in series of parcels; Drawing and drafting of the parceling plan.
<b>Drawing and drafting of basic topographical plan:</b> Contents of basic topographical plans; Works in the preparatory phase; Reporting of the points on support and lifting network; Graphical accuracy of topographical plan; Verification of points reporting; The union of reported points; Tracing on the plan of the level curves; Average altitude error of a level curve; Mapping of the basic topographic cadastral plan and of the situation plan with level curves.
<b>Final colloquium of knowledge evaluation.</b>

## Bibliography

1. Boş N., Iacobescu O. – *Topografie modernă*. Editura C. H. Beck, Bucureşti, 2007
2. Dragomir P., Haret C., Moraru N., Neuner I., Săvulescu C. – *Lucrări topografice în cadastru. Ghid*. Editura MatrixRom, Bucureşti, 2000
3. **Huţanu Cr.** – *Sistemul Informaţional al Cadastrului Viticol*. Editura Tehnopress, Iaşi, 2014
4. Leu I. N., Budiu V., Moca V., Ritt C., Ciolac Valeria, Ciotlăuş Ana, Negoescu I. – *Topografie generală şi aplicată – Cadastru*. Editura Universul, Bucureşti, 2003
5. Moca V., Ilioi D. – *Cadastrul funciar general. Lucrări şi calcule topografice*. Editura Nona, Piatra Neamţ, 1998

6. Moca V., **Huțanu Cr.**– *Cadastru agricol*, curs pentru studentii de la zi, specializarea IEA, Facultatea de Agricultură, Universitatea de Științe Agricole și Medicină Veterinară, „Ion Ionescu de la Brad” Iași, 2017
7. Moca V., Radu O., **Huțanu Cr.** – *Topografie și desen tehnic*. Editura „Ion Ionescu de la Brad”, Iași, 2016
8. Moca V., Radu O., **Huțanu Cr.** – *Îndrumător pentru lucrări practice și proiect de topografie*. Fascicole, uz intern, U.S.A.M.V., Iași , 2016
9. Onose D., *Topografie* – Editura MatrixRom, București, 2004
10. Osaci-Costache Gabriela – *Topografie-Cartografie*, ediția a II-a revăzută, Editura Universitară, București, 2011

### Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Oral examination	60%
Appreciation of the activity during the semester.	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

### Contact

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