

## SYLLABUS

### 1. Data about the program of study

1.1	Institution	The Technical University of Cluj-Napoca
1.2	Faculty	Faculty of Civil Engineering
1.3	Department	Mecanica constructiilor
1.4	Field of study	Civil Engineering
1.5	Cycle of study	Bachelor of Science
1.6	Program of study/Qualification	Civil, Industrial and Agricultural Buildings /Engineer (English language)
1.7	Form of education	Full time
1.8	Subject code	23.0

### 2. Data about the subject

2.1	Subject name				Topografie						
2.2	Course responsible/lecturer				Conf.Dr.Ing. Bondrea Mircea-Vasile-Mircea.Bondrea@mtc.utcluj.ro						
2.3	Teachers in charge of seminars				Conf.Dr.Ing. Bondrea Mircea-Vasile-Mircea.Bondrea@mtc.utcluj.ro						
2.4	Year of study	2	2.5	Semester	1	2.6	Assessment	E	2.7	Subject category	DID/DI

### 3. Estimated total time

3.1	Number of hours per week	4	3.2	of which, course:	2	3.3	applications:	
3.4	Total hours in the curriculum	56	3.5	of which, course:	28	3.6	applications:	
Individual study								hours
Manual, lecture material and notes, bibliography								30
Supplementary study in the library, online and in the field								11
Preparation for seminars/laboratory works, homework, reports, portfolios, essays								15
Tutoring								0
Exams and tests								9
Other activities								4
3.7	Total hours of individual study	69						
3.8	Total hours per semester	125						
3.9	Number of credit points	5						

### 4. Pre-requisites (where appropriate)

4.1	Curriculum	To have knowledge of plane geometry, space geometry and trigonometry
4.2	Competence	-

### 5. Requirements (where appropriate)

5.1	For the course	Cluj-Napoca, str.Baritui, Nr. 25, sala A/II, B/II, C/II
5.2	For the applications	"O15/50 m2 Str.Observatorului nr.70., for office work; - The back yard of the building on Str.Observatorului nr.70. - Field measurements in Zorilor neighbourhood – in the vicinity of

		the faculty building; on site"
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## 6. Specific competences

Professional competences	<p>Theoretical knowledge:</p> <ul style="list-style-type: none"> <li>- Designing topographic plans based on the surveys done by means of field measurements (characteristic points);</li> <li>- Carrying out the calculations, drawing the plans by reporting the points on the desired scale and usage of these plans;</li> <li>- Calculation of the tracing elements and field tracing of the designed buildings through transposing the designed elements from the scale of the plan to the 1/1 scale;</li> <li>- Usage of the extant trigonometric control networks and creation of new ones in order to bring some known coordinate points and heights to the work area.</li> <li>- Use the traditional topographic apparatuses in order to perform works of planimetry, tacheometry and levelling;</li> <li>- Trace distances, angles, heights, slope lines, axes of buildings and of arc of circle contours;</li> <li>- Learn how to use the modern appartuses - total stations: working mode, menus, configurations etc.;</li> <li>- Perform works specific to the building sites, during the summer practical activities periods.</li> </ul> <p>After having studied the discipline, the students will be able to:</p> <ul style="list-style-type: none"> <li>- Work with the theodolite;</li> <li>- Work with the level;</li> <li>- Work with the rest of the studied topographical instruments (measuring staffs, steel tapes and reels, pegs and, in the future, with the total station).</li> </ul>
Cross competences	<p>CT1. Aplicarea strategiilor de munca eficienta si responsabila, de punctualitate, seriozitate si raspundere personala, pe baza principiilor, normelor si a valorii eticii profesionale.</p> <p>CT2. Aplicarea tehnicilor de munca eficienta in echipa, pe diverse paliere ierarhice.</p> <p>CT3. Documentarea in limba romana si intr-o limba straina, pentru dezvoltarea profesionala si personala, prin formare continua si adaptarea eficienta la noile specificatii tehnice.</p>

## 7. Discipline objectives (as results from the *key competences gained*)

7.1	General objective	<p>"C.1. Recunoasterea elementelor si structurilor constructiilor din domeniul ingineriei civile specific programului de studii absolvit</p> <p>C.3. Proiectarea tehnologica si economica pentru lucrari de executie, exploatare si intretinere a constructiilor din domeniul ingineriei civile specificul programul de studii absolvit</p> <p>C.4. Organizarea si conducerea procesului de executie, exploatare si intretinere a constructiilor din civile, industriale si agricole"</p>
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7.2	Specific objectives	"C1.1. Identificarea rolului structural si functional al elementelor unei constructii civile, industriale si agricole. C1.3. Reprezentarea grafica a elementelor unei constructii existente prin relevu si utilizarea unui program de grafica C1.5. Particularizarea continutului si detalierea studiilor de fundamentare pentru documentatii tehnice pe faze de promovare a investitiei pentru constructii civile, industriale si agricole."
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## 8. Contents

8.1. Lecture (syllabus)	Teaching methods	Notes
Course 1. The object and the importance of the discipline. The topographic elements of the terrain. Notions related with the errors in the topographical measurements.	interactive teaching methods	team work coordination
Course 2. Plans and maps. Scales.Topographical symbols. Relief representation.		
Course 3. Using the topographic plans and maps. Calculation of surfaces on plans and maps.		
Course 4. Study of the theodolite. Methods used to measure the horizontal and vertical angles.		
Course 5. Marking and signaling the points. Ranging the alignments. Direct and indirect measuring of distances: instruments and procedure.		
Course 6. Planimetric surveys. Trigonometric control networks for the planimetric surveys. Methods to survey the planimetric details.		
Course 7. Reporting the points of the topographic plans. Levelling: introductory notions, principles, classifications.		
Course 8. Levelling instruments and procedures. Middle and end geometric levelling. Levelling traverse.		
Course 9. Trigonometric and tacheometric levelling. Notions of aerial and terrestrial photogrammetry.		
Course 10. Engineering topography. Object. The direct and reversed topographic problem. Topographic works within the construction activity. The calculation of the tracing elements.		
Course 11. Tracing the simple topographic elements: distances, angles, heights, slope lines.		
Course 12. Tracing and marking the axes of the constructions. Detailed tracing of constructions.		
Course 13. Tracing the foundation holes and verification of their depth.		
Course 14. Monitoring the way the buildings behave during usage. Labour safety technique in topographic works.		
Bibliography In UTC-N library:  Nuțiu C., Topografie,editie bilingva romana – engleza, Ed. U.T. PRESS..Cluj, 2009. Nuțiu C., Roib V., Topografie, Ed. U.T. PRESS.Cluj, 2010. Nuțiu C., Topografie, Ed. U.T. PRESS..Cluj, 2017. Orghidan T. Topografie-curs, Ed. U.T. PRESS.Pres 2001. Boș N., Iacobescu O., Topografie modernă, Ed.C.H.Beck, 2007. Cristescu N., Ursea V., ș.a. Topografie, Ed. Didactică și Pedagogică, București 1980. Cristescu N., Topografie inginerească, Ed. Didactică și Pedagogică, București 1978.		

Coșarcă C-tin, Topografie inginerească, Ed. MATRIX ROM, București 2003. Nuțiu C., Topografie generala – CD, Ed. U.T. PRESS..Cluj, 2015.		
8.2. Applications/Seminars	Teaching methods	Notes
Lab. 1. Labour safety norms that must be observed during topographic works (lab and field). Recapitulation of trigonometric notions and units of measurement. The topographic circle.	interactive teaching methods	team work coordination
Lab. 2. Calculation of the topographic elements.		
Lab. 3. Problems of planimetry on plans and maps.		
Lab. 4. Altimetry problems on plans and maps.		
Lab. 5. Study of the theodolite: component parts, functioning, performing an observation point, aiming the points and performing the readings.		
Lab. 6. Measuring the horizontal and vertical angles. Calculation and compensation of the angles by means of the quick look.		
Lab. 7. Calculation of the supported planimetric traverse.		
Lab. 8. Survey of the planimetric details. Reporting planimetry.		
Lab. 9. Study of the instruments for geometric levelling. Measuring the differences in altitude.		
Lab. 10. Geometric levelling traverse. Survey of the details through the profile method.		
Course 11. Tracing the simple topographic elements: distances, angles, heights, slope lines.		
Lab. 12. Tracing topographic elements: distances, angles.		
Lab. 13. Tracing topographic elements: heights and slope lines.		
Lab. 14. Finalizing the activities. Remakings. Recouperations.		
Bibliography Bibliography For lab activity: Nuțiu C., Topografie - Indrumător de lucrari de laborator, Ed. U.T. Press, Cluj-Napoca, 2014. Nuțiu C., Topografie - Indrumător de lucrari de laborator, Ed. U.T.Press, Cluj-Napoca, 2009. Orghidan T., Cenan N., Topografie - lucrări de laborator, Ed. U.T.Pres 2000.		

**9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field**

Competentele propuse au rezultat în urma discuțiilor cu operatorii din domeniu.

**10. Evaluation**

Activity type	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Examination consists of theoretical testing (T);	Theoretical knowledge questions, in writing – ONLINE, 30 min.	60%
10.5 Applications	Examination consists of applications/works testing (A), (L).	Applications knowledge questions, in writing – ONLINE, 30 min.	40%
10.6 Minimum standard of performance			

Theorie (T); Applications (A); Lab activity ( L) : Grade = 0,60T+0,20A+0,20L;  
 Condition to obtain the credits:  $T \geq 5$ ;  $A \geq 5$ ;  $L \geq 5$ .

Date of filling in:		Title Surname Name	Signature
	Lecturer	Conf.Dr.Ing. Bondrea Mircea-Vasile	
	Teachers in charge of application	Conf.Dr.Ing. Bondrea Mircea-Vasile	

Date of approval in the department .....	Head of department
19/06/2025	conf.dr.ing. Anca-Gabriela POPA
Date of approval in the faculty .....	Dean
25/06/2025	prof.dr.ing Daniela Manea