

FIȘA DISCIPLINEI

1. Date despre program

1.1 Instituția de învățământ superior	Universitatea Tehnică din Cluj Napoca
1.2 Facultatea	Constructii
1.3 Departamentul	Mecanica constructiilor
1.4 Domeniul de studii	Inginerie civila
1.5 Ciclul de studii	Licenta
1.6 Programul de studii / Calificarea	Constructii civile, industriale si agricole (CCIA-eng)/inginer
1.7 Forma de învățământ	IF – învățământ cu frecvență
1.8 Codul disciplinei	25.0

2. Date despre disciplină

2.1 Denumirea disciplinei	Hidraulica constructiilor						
2.2 Titularul de curs	Sl.Dr.Ing. Botos Marius-Lucian-Marius.Botos@mecon.utcluj.ro						
2.3 Titularul activităților de laborator	Drd.Ing. Popa Victor □ Dan-nan						
2.4 Anul de studiu	2	2.5 Semestrul	1	2.6 Tipul de evaluare	E	2.7 Regimul disciplinei	DID/D I

3. Timpul total estimate

3.1 Număr de ore pe săptămână	4	din care:	3.2 Curs	2	3.3 Seminar	-	3.3 Laborator	2	3.3 Proiect	-
3.4 Număr de ore pe semestru	56	din care:	3.5 Curs	28	3.6 Seminar	-	3.6 Laborator	28	3.6 Proiect	-
Distribuția fondului de timp (ore pe semestru) pentru:										ore
(a) Studiul după manual, suport de curs, bibliografie și notițe										20
(b) Documentare suplimentară în bibliotecă, pe platforme electronice de specialitate și pe teren										10
(c) Pregătire seminarii / laboratoare, teme, referate, portofolii și eseuri										10
(d) Tutoriat										1
(e) Examinări										3
(f) Alte activități:										0
3.7 Total ore studiu individual (suma (3.7(a)...3.7(f)))					44					
3.8 Total ore pe semestru (3.4+3.8)					100					
3.9 Numărul de credite					4					

4. Precondiții (acolo unde este cazul)

4.1 de curriculum	-
4.2 de competențe	-

5. Condiții (acolo unde este cazul)

5.1. de desfășurare a cursului	Classroom with blackboard, videoproiector and wireless internet connection
5.2. de desfășurare a laborator	Labroom with hydraulic stands, wireless internet connection

6. Competențele specifice acumulate

Competențe profesionale	After completing the syllabus, the students will be able to: <ul style="list-style-type: none"> <input type="checkbox"/> To calculate hydrostatic pressures and forces; <input type="checkbox"/> To calculate water supply systems of a town/plant; <input type="checkbox"/> To calculate unitary canalization network. <input type="checkbox"/> To calculate the collection of underground water with several wells; <input type="checkbox"/> To compute water levels on rivers and canals;
Competențe transversale	Applying efficient and responsible individual and team work strategies, punctuality, industriousness in their projects. Applying efficient communication in team work. Development of self-expression, vocabulary and technical culture. Development of their technical status and active adaptation to new technical specifications.

7. Obiectivele disciplinei (reieșind din grila competențelor specifice acumulate)

7.1 Obiectivul general al disciplinei	To develop skills in Hydraulics that includes deterministic way of thinking by procedural approaches.
7.2 Obiectivele specifice	Assimilation of theoretical and practical aspects of Hydraulics. Capability of applying concepts of Theoretical Hydraulics to Hydrotechnical constructions design.

8. Conținuturi

8.1 Curs	Metode de predare	Observații
Short history. Connection with other disciplines. Liquids physical properties.	Teams - Powerpoint+OneNote	Teams https://mariusbotos.wixsite.com/mysite/cursuri
Fundamental law of hydrostatics. Hydrostatic pressure.		
Measuring hydrostatic pressure. Hydrostatic forces on plane surface. Horizontal and vertical surfaces.		
Hydrostatic forces on plane inclined surfaces. Hydrostatic force on curvilinear surfaces.		
Introduction to Hydrodynamics. Laws of hydrodynamics.		
Bernoulli's equation.		
Bernoulli's equation geometrical interpretation. Head loss in hydraulic installations.		
Hydraulic systems with pressure flow.		
Aquifer layers. Characteristics of an aquifer layer. Determining of characteristics.		
Collecting wells and drains for intakes of underground water. Calculation of systems of wells and drains. Tapping of		

underground water using several wells		
Open channel flow. General characteristics of open-channel flow .Uniform flows		
Surface waves. Froude number effects		
Energy considerations of open channel flow.		
Uniform flows.		
1. D. Cioc – Hidraulica , Bucuresti,EDP 1975 2. M. Ghiurconiu – Hidraulica si lucrari edilitare, Timisoara, 1965, IPT 3. Frank M. White - Fluid Mechanics, McGraw-Hill Series in Mechanical Engineering, 4. Munson, Bruce R., Young, Donald F., Okiishi, Theodore H., Huebsch, Wade W. Fundamentals of Fluid Mechanics, Sixth Edition,ISBN 978-0470-26284-9, John Wiley & Sons,. 5. J. EVET- 2500 SOLVED PROBLEMS IN FLUD MECHANICS AND HYDRAULICS, McGraw-Hill Lecture notes: https://mariusbotos.wixsite.com/mysite/cursuri		
8.2 laborator	Metode de predare	Observatii
Presentation of laboratory, measures for work and health protection.	Teams - Powerpoint+OneNote	Teams https://mariusbotos.wixsite.com/mysite/cursuri
Water properties. Units of measure.		
Hydrostatic pressure.		
Hydrostatic forces on plane surfaces-horizontal -vertical		
Hydrostatic forces on plane inclined surfaces		
Hydrostatic forces on curvilinear surfaces (cylindrical).		
Continuity equation. Bernoulli' equation.		
Continuity equation. Bernoulli' equation including head loss		
Design of a water supply networks - polyethylene pipelines		
Dimensioning of a water supply networks - steel and cast iron pipelines		
Open channel flow. General characteristics of open-channel flow .Uniform flows		
Collection of underground wells with collecting wells. Calculation of collecting wells. Number of wells needed.		
Open channel flow. Energetical interpretation of flow		
Open channel flow. General characteristics of open-channel flow .Uniform flows		

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9. Coroborarea conținuturilor disciplinei cu așteptările reprezentanților comunității epistemice, asociațiilor profesionale și angajatorilor reprezentativi din domeniul aferent programului

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10. Evaluare

Tip activitate	10.1 Criterii de evaluare	10.2 Metode de evaluare	10.3 Pondere din nota finală
10.4 Curs	7-8 questions from theory and applications (1.5 hours)	Written test.	Written test 100%
10.5 laborator	Activity during the semester (portfolio with solved problems)		A/R
10.6 Standard minim de performanță			
Solving and handing over of laboratory works by deadlines and getting at least 5 points individually at 2-3 of the three assessment criteria.			

Data completării: 2025-09-25	Titulari	Titlu Prenume NUME	Semnătura
	Curs	Sl.Dr.Ing. Botos Marius-Lucian	
	laborator	Drd.Ing. Popa Victor □ Dan	

Data avizării în Consiliul Departamentului 2025-06-20	Director Departament conf.dr.ing. Anca-Gabriela POPA
Data aprobării în Consiliul Facultății Construcții 2025-06-25	Decan prof.dr.ing Daniela Lucia Manea