

**O‘ZBEKISTON RESPUBLIKASI**  
**OLYIY TA‘LIM, FAN VA INNOVATSIYALAR VAZIRLIGI**

**SAMARQAND DAVLAT ARHITEKTURA – QURILISH UNIVERSITETI**

**“KELISHILGAN”**

o‘quv ishlari bo‘yicha prorektor

  
M.T. Shodmonqulov

Ro‘yxatga olindi: № 04/A.

«29» avgust 2025 yil



**SUYUQLIK MEXANIKASI**

**FAN DASTURI**

<b>Bilim sohasi:</b>	700 000 - Muhandislik, ishlov berish va qurilish sohalari
<b>Ta‘lim sohasi:</b>	730 000 - Arxitektura va qurilish
<b>Ta‘lim yo‘nalishi:</b>	60730300 - Qurilish muhandisligi

**Kurs ma'lumotlari**  
Course Information Form

<b>Modul kodi</b> Code <b>KRM 2050</b>	<b>O'quv yili</b> 2025-2026	<b>Semestr</b> 4	<b>ECTS – Kreditlar</b> 4-semestr -5		
<b>Modul turi</b> Majburiy	<b>Ta'lim tili</b> O'zbek/rus		<b>Auditoriya soatlari</b>		<b>Mustaqil ta'lim</b> (soat/hafta) Independent Education (hour/week)
<b>Fan nomi</b> Title	<b>Jami yuklama</b>		<b>Ma'ruza</b> (soat/hafta) Lecture (hour/week)	<b>Amaliy</b> (soat/hafta) Practical (hour/week)	<b>Laboratoriya</b> (soat/hafta) Laboratory (hour/week)
<b>Suyuqlik mexanikasi</b>	4-semestr -150		4-semestr -2	4-semestr -1	4-semestr -1

<b>Dastlabki shart</b> Prerequisite	<b>Yo'q</b> None
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<b>Semestr</b> Semestr	<b>Bahorgi</b> Spring
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<b>Kurs tili</b> Course language	<b>O'zbek, Ingliz, Rus</b> Uzbek, English, Russian
<b>O'quv kursi</b> Level of Course	<b>Ikkinchi kurs</b> The second Cycle
<b>Ta'lim yo'nalishlari</b> Course type	60730300 – Qurilish muhandisligi (faoliyat turlari bo'yicha)
<b>Kurs toifasi</b> Course Category	Asosiy Core Courses
<b>Dars shakli</b> Mode of Delivery	An'anaviy (Yuzma – yuz muloqot) Face – to - face

<b>Ma'sul kafedra</b> Owner academic unit	Atrof muhit muhandisligi Environmental engineering
<b>Kursga ma'sul</b> Cours Coordinator	B.M.Norqulov
<b>O'qituvchilar</b> Instructor(s)	X.B.Arrtikboyev
<b>Yordamchilar</b> Asistant(s)	D.Sobirova

<b>Fanni o'qitishdan maqsad</b> Course objectives	<p>Talabalarda suyuqlikning muvozanati, harakatdagi qonuniyatlari va jarayonlarini hamda gidravlik jarayonlar, quvurlardagi qarshiliklar, suv ta'minoti va oqova suvlarni oqizish inshootlarning gidravlik hisobini o'rganish, amaliyotda tatbiq etish ko'nikmasini hosil bo'lishdan iborat.</p> <p>In students, the balance of fluid, its laws and processes in movement and hydraulic processes, resistances in pipes, water supply and drainage of wastewater consist in the formation of the skill of hydraulic accounting of structures, implementation in practice.</p>
<b>Fanning mazmuni</b> Course content	<p>Muvozanatda va harakatdagi suyuqlik qonunlari va ularni texnik masalalarni yechishda qo'llash usullari haqida, suyuqliklarning fizik xususiyatlari va ulardan amaliyotda foydalanish holatlar, suyuqliklardagi jism va ularning o'zaro ta'siri; suv ta'minoti quvurlarni gidravlik hisoblari, gidravlik jarayonlar haqida tasavvurga ega bo'lishi.</p> <p>Oqimning gidravlik elementlarini, suyuqlikning laminar va turbulent harakat tartiblarini, suvning quvurlarda harakati qonuniyatlarini va gidravlik parametrlarini aniqlashni, gidravlik qarshiliklarni va ularni aniqlash uslublarini bilish va ulardan foydalana olishi.</p>

	<p>About the laws of liquids in equilibrium and motion and the methods of their application in solving technical issues, physical properties of liquids and their use in practice states, the body in liquids and their interaction; the fact that the water supply has an idea of hydraulic calculations of pipes, hydraulic processes.</p> <p>The ability to know and use the hydraulic elements of the flow, the laminar and turbulent modes of movement of the fluid, the laws of movement of water in pipes and the determination of hydraulic parameters, hydraulic resistances and methods of their detection.</p>
<p><b>Tavsiya qilingan yoki talab qilinadigan adabiyotlar ro'yxati</b> Recommended Or Required Reading</p>	<p><b>Asosiy adabiyotlar:</b></p> <ol style="list-style-type: none"> <li>1. Bazarov D.R., Karimov R.M., Matyakubov B.Sh., Xidirov S.Q., Gidravlika -1 Toshkent-2018 yil-539 b.</li> <li>2. Bazarov D.R., Karimov R.M., Matyakubov B.Sh., Xidirov S.Q., Gidravlika -2 Toshkent-2018 yil-556 b.</li> <li>3. Umarov A.Yu. «Gidravlika». Toshkent, «Uzbekistan», 2002.-367 b.</li> <li>4. Ubaydullaev P.X., Ubaydullaev B.P..Amaliy suyuqlik mexanikasi. Oliy o'quv yurtlar uchun o'quv qo'llanma.To'ron-Iqbol.Toshkent 2006.</li> <li>5. R.R.Chugayev., Gidravlika., Energoizdat, 1982 god-672 str.</li> <li>6. A.M.Arifjanov, Ch.Fayziev, A.U.Toshxo'jaev., Gidravlika, Yoshlar nashriyoti uyi, Toshkent-2020 yil -370 bet</li> <li>7. B.M.Norqulov, Suyuqlik va gaz mexanikasidan masalalar yechish usullari, SamDU nashriyoti 2022 yil-154 bet</li> <li>8. Norqulov B.M, Tadjieva D.O. «Suyuqlik va gaz mexanikasi» fanidan (masalalar to'plami) uslubiy qo'llanma Samarqand, 2020 y.-74 b.</li> <li>9. Suyuqlik va gaz mexanikasi fanidan laboratoriya ishlarini bajarish uchun uslubiy qo'llanma. Norqulov B.M., X.Artaqboev, D.Tadjieva SamDAQI. Samarqand 2022</li> <li>10. <a href="https://www.utt Tyler.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.utt Tyler.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a></li> </ol>
<p><b>Tavsiya etilgan qo'shimcha dastur komponentlari</b> Recommended Optional Program Components</p>	<p>Yo'q (bor bo'lsa yoziladi)</p> <p>None</p>

<b>Kursni o'rganish natijalari</b>	
Course learning outcomes	
1.	Gidroststik bosim; Hydraulic pressure;
2.	Suyuqlikni fizik xossalari; Physical properties of the liquid in the moment;
3.	Arximed qonuni; The blood of Archimedes;
4.	Bosim va uni ulchash asboblari; Pressure and instruments of pressing it;
5.	Suyuqlik energiyasini saqlanish qonuniyati; The law of conservation of fluid energy;
6.	Suyuqlik va gazlarning gidrodinamikasini; Hydrodynamics of liquids and gases;
7.	Suyuqlik harakat tartiblari; Fluid motion arrangements;
8.	Gidravlik qarshiliklarni; Beat hydraulic resistors;

9.	Naporli quvurlarida bosim kamayishiga gidralik qarshilikni ta'siri; Effect of hydraulic resistance on pressure reduction in naporli pipes of the furnace;
10.	Quvurlarda napor kamayishiga darsi koefitsentini qullash sohalari; Areas of enslavement of Darcy coeficent to napor reduction in quavers;
11.	Bosimli quvurlarda gidravlik hisoblashni; Hydraulic calculation in pressurized pipes;

Haftalik mavzular va tegishli tayyorgarlik ishlari Weekly Subjects and Related Preparation Studies		
Hafta Week	Ma'ruza mavzular Themes	Resurslar Related preparation
1.	Kirish. Umumiy ma'lumotlar. Suyuqliklarning fizik xossalari.	1,2,3-darslik (I bob)
2.	Gidrostatika. Hidrostatik bosim va uning xossalari. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	1,2,3-darslik (I bob)
3.	Gidrostatikaning asosiy tenglamasi.	1,2,3-darslik (I bob)
4.	Suyuqlikning tekis devorga va egri sirtlarga bosim kuchi. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	1,2,3-darslik (I bob)
5.	Arximed qonuni.	1,2,3-darslik (I bob)
6.	Gidrodinamika asoslari. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	1,2,3-darslik (I bob)
7.	Suyuqlik oqimi, uning harakat kesimidagi sarfi va o'rtacha tezligi.	1,2,3-darslik (I bob)
8.	Gidrodinamikaning asosiy masalasi. Uzluksizlik tenglamasi. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	1,2,3-darslik (I bob)
9.	Ideal va Real suyuqlikning to'liq oqimi uchun. D.Bernulli tenglamasi. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	2-darslik (I bob)
10.	Bernulli tenglamasining gidravlik, geometrik va energetik manolari.	2-darslik (I bob)
11.	Suyuqlik harakatining tartiblari. Suyuqlik harakatining ikki tartibi. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	2-darslik (II bob)
12.	Gidravlik qarshiliklar. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	2-darslik (II bob)
13.	Gidravlik ishqalanish koefitsienti uchun formulalar va ularning qo'llanilish sohalari.	2-darslik (III bob)
14.	Quvurlarni gidravlik hisoblash. <a href="https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source">https://www.uttlyer.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source</a>	2-darslik (IV bob)
15.	Murakkab quvurlarni gidravlik hisoblash.	2-darslik (IV bob)
Hafta Week	Amaliy mavzular Themes	Resurslar Related preparation
1.	Qovushqoqlikni aniqlash. Suyuqlikga ta'sir etuvchi kuchlarni hisoblash usullari.	1,7-darslik (II bob)
2.	Tinch faqat hajmiy kuchlardan biri-og'irlik kuchi ta'sirida bo'lgan tinch	1,7-darslik (II bob)

	holatdagi suyuqlikdagi gidrostatik bosimini aniqlash.	
3.	Absalyut, ortiqcha bosimlar va vakuumni aniqlash. Ortiqcha va manometrik bosim farqini aniqlash va Manometrik va vakuumetrik bosim farqlari. B. Paskal qonuni va uning amalda hisoblash.	1,7-darslik (II bob)
4.	To'g'ri to'rtburchakli devorga ta'sir etuvchi gidrostatik bosimni aniqlash. Gidrostatik bosim kuchining tekis to'g'ri to'rtburchakli devorga ta'siri hisobi.	1,7-darslik (III bob)
5.	Jismlarning cho'kishi chuqurligi va uni siqib chiqargan suv hajmini aniqlash. Suyuqlikda suzayotgan jismlarini muozanat holatini hisobi.	1,7-darslik (III bob)
6.	Suyuqlik oqimining barqaror va beqaror harakatini aniqlash usullari. Suyuqlik harakatini o'rganishda qo'llaniladigan asosiy analitik usullari.	1,7-darslik (III bob)
7.	O'zan ko'ndalang kesimining ho'llangan perimetrini hisobi. Suyuqlik oqimi, uning harakat kesimidagi sarfi va o'rtacha tezligini aniqlash usuli. Suyuqlik oqimining hajmiy sarfi.	1,7-darslik (III bob)
8.	Suyuqlik oqimining uzluksizlik tenglamasi keltirib chiqarish. Traektoriya. Oqim chizig'i. Elementlar oqim naychasi	1,7-darslik (III bob)
9.	Hajmi o'zgaruvchan quvurda D.Bernuli englamasi orqali oqim holatini aniqlash. Pe'zometrik va gidravlik nishabliklar.	1,7-darslik (III bob)
10.	Pe'zometrik va napor chiziqlarini ma'nosi va chiziqlarining shakllari.	1,7-darslik (III bob)
11.	Reynoldsnng kritik qiymatini aniqlash. Suyuqliklarning laminar va turbulent harakat o'tish chegaralari hisobi.	1,7-darslik (III bob)
12.	Gidravlik ishqalanish koeffitsientini aniqlovchi nazariy asoslari. Darsi-Veysbax formulalarini qo'llash sohalari.	1,7-darslik (III bob)
13.	Gidravlik ishqalanish koeffitsienti. Kvadrat qarshilik sohasi uchun o'yqotilgan napor hisoblash formulalari. A.Shezi formulasi. Sarf moduli. Tezlik moduli: A.Shezi koeffitsientini hisoblash uchun emperik formulalar.	1,7-darslik (IV bob)
14.	Naporli quvurlarda suyuqlik harakati vaqtida yo'qotilgan naporli hisoblash formulalari. Yo'qotilgan bosimlarni qo'shib chiqish. To'liq ishqalashish koeffitsienti. Kalta quvurlarni gidravlik hisoblash.	1,7-darslik (IV bob)
15.	Murakkab xalqasimon uzun quvurlar tizimini hisoblash. Uzun quvurlarni hisoblashdagi masalalar turlari.	1,7-darslik (IV bob)
<b>Hafta Week</b>	<b>Laboratoriya mavzular Themes</b>	<b>Resurslar Related preparation</b>
1.	Suyuqlikning zichligini aniqlash. Suyuqlikning issiqlik kengayishi koeffitsientini aniqlash.	9-darslik
2.	Viskozimetr Stoks yordamida qovushqoqlikni aniqlash.	9-darslik
3.	Ko'tarish.Arxmlmed kuchi aniqlash. Suyuqliklarning yuza tarangligi (Yuza tarangligini o'lchash shkalasi, Konusli tajriba)Statik va dinamik bosimni o'lchash	9-darslik
4.	Suyuqlikning ortiqcha bosimini manometer va pezometr yordamida aniqlash.	9-darslik
5.	Idish tubiga bo'lgan bosimni aniqlash. Suvning gidrostatik bosimini o'lchash.Tutash idishdagi gidrostatik bosim. Boyl-Mariott qonuni.	9-darslik

Baholash jarayoni Evaluation System		
Mashg'ulot turi Activities	Soni Number	Baholash Percentage of Grade
Darsga qatnashish Attendance / particition	45	15
Laboratoriya ishi Laboratory	15	5
Amaliy ish (qo'shimcha vazifa) Application		
Kurs ishi Field work		
Maxsus kurs amalyoti (ish joyida) Special course internship (work placement)		
Testlar Quizzes / studio crtics		

Uyga vazifani baholash Homework assignments		
Ijodiy ish (taqdimot) Presentations / jury		
Loyiha ishi Project		
Seminar Seminar / workshop		
Oraliq nazorat Mid -Terms	2	30
Yakuniy nazorat Final	1	40
O'zlashtirish ko'rsatgichi Percentage of in – term studies		60
Yakuniy imtihon bahosi Percentage of final examination		40
Jami Total		100

<b>ECTS taqsimoti</b> ECTS workload table			
Topshiriqlar Activities	Soni Number	Davomiyligi (soat) Duration (hour)	Umumiy yuklama Total workload
<b>Mashg'ulot soati</b> Course hours	15	3	45
<b>Laboratoriya ishi</b> Laboratory	5	3	15
<b>Amaliy ish (qo'shimcha vazifa)</b> application			
<b>Kurs ishi</b> Field work			
<b>Mustaqil ta'lim (maslahat)</b> Study hours out of class	10	6	60
<b>Maxsus kurs amalyoti (ish joyida)</b> Special course internship (work placement)			
<b>Uyga vazifani baholash</b> Homework assignments	5	2	10
<b>Testlar / Viktorina</b> Quizzes / studio critics			
<b>Loyiha ishi</b> Project			
<b>Ijodiy ish (taqdimot)</b> Presentations / seminar			
<b>Oraliq nazorat</b> Mid – terms (Examination +Examination prep. Duration)	2	5	10
<b>Yakuniy nazorat (nazorat va nazoratga tayyorlanish soati)</b> Final (examination +examination prep.Duration)	1	10	10
		<b>Jami yuklama</b> Total workload	150
		<b>Jami yuklama / 30 (soat)</b> Total workload / 30(h)	150/30=5
		<b>Kredit</b> ECTS <sup>3</sup> credit	5

<b>Qo'shimcha eslatmalar</b> Extra Notes	Yo'q\ (bor bolsa yoziladi) None
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Oliy ta'lim, fan va innovatsiyalar vazirligi tomonidan 2025-yil uchun tasdiqlangan xalqaro e'tirof etilgan tashkilotlarning reytingida top 300 talikka kiruvchi University of Texas at Tyler (QS-68) ning "Fluid Méchanics and Hydraulics" fan dasturi tahlil qilinib ushbu asosda fan dastur ishlab chiqildi. "Suyuqlik mexanikasi" fanining dasturi tayyorlanib 8 ta mavzusi yangilandi.

[[https://www.uttyler.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm\\_source](https://www.uttyler.edu/academics/colleges-schools/engineering/departments/civil-and-construction-engineering-and-management/civil-engineering/documents/2024/ceng3310-050.051-za-fall2024.pdf?utm_source) ]

Fan dasturi Mirzo Ulug'bek nomidagi Samarqand davlat Arxitektura-qurilish universiteti Kengashning 2025 yil \_\_-avgustdagi №\_\_-sonli bayonnomasi bilan ma'qullangan.

**Kafedra mudiri:**

B.M.Norqulov

**Tuzuvchilar:**

X.B.Artikboyev

D.A.Sobirova