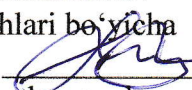


O‘ZBEKISTON RESPUBLIKASI
OLIY TA’LIM, FAN VA INNOVATSIYALAR VAZIRLIGI
SAMARQAND DAVLAT ARHITEKTURA – QURILISH UNIVERSITETI

“KELISHILGAN”
o‘quv ishlari bo‘yicha
prorektor 
M.T. Shodmonqulov
Ro‘yxatga olindi: № 28/7
«30» avgust 2024 yil



SUVNI TOZALASHNING ZAMONAVIY
USULLARI FAN DASTURI

Bilim sohasi: 700 000 - Muhandislik, ishlov berish va qurilish sohalari
Ta’lim sohasi: 730 000 - Arxitektura va qurilish
Ta’lim yo’nalishi: 70730401 - Muhandislik kommunikatsiya tizimlari,
qurilishi va montaji

Samarqand – 2024

Kurs ma'lumotlari
Course Information Form

Modul kodi Code MAS5140	O'quv yili 2024-2025	Semestr 1	ECTS – Kreditlar 1-semestr -5		
Modul turi Majburiy	Ta'lim tili O'zbek		Auditoriya soatlari		Mustaqil ta'lim (soat/hafta) Independent Education (hour/week)
Fan nomi Title	Jami yuklama	Ma'ruza (soat/hafta) Lecture (hour/week)	Amaliy (soat/hafta) Practical (hour/week)	Laboratoriya (soat/hafta) Laboratory (hour/week)	
Oliy suyuqlik mexanikasi	1-semestr -150	1-semestr -3			1-semestr -7

Dastlabki shart Prerequisite	Yo'q None
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Semestr Semestr	Bahorgi Spring
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Kurs tili Course language	O'zbek Uzbek
O'quv kursi Level of Course	Birinchi kurs First Cycle
Ta'lim yo'nalishlari Course type	70730401 - Muhandislik kommunikatsiya tizimlari, qurilishi va montaji 70730401-Engineering communication systems, construction and assembly
Kurs toifasi Course Category	Asosiy Core Courses
Dars shakli Mode of Delivery	An'anaviy (Yuzma – yuz muloqot) Face – to - face

Ma'sul kafedra Owner academic unit	Atrof muhit muhandisligi Environmental engineering
Kursga ma'sul Cours Coordinator	B.M.Norqulov
O'qituvchilar Instructor(s)	B.M.Norqulov
Yordamchilar Asistant(s)	M.N. Mirzayev

Fanni o'qitishdan maqsad Course objectives	<p>"Suvni tayyorlashning zamonaviy usullari" Fanni o'qitishdan maqsad – magistrantlarda shahar va sanoat korxonalarini suv bilan ta'minlash va suv manbalaridan oqilona foydalanish tabiiy suvlarni tozalash va chiqindilarga ishlov berish usullari, ishlatiladigan inshootlarning tuzilishi, turlari, ishlatilish ko'lami, hisoblash asoslari va ularni muayyan sharoitlarga mos xolda tanlash usullari bo'yicha yo'nalish profiliga mos bilim, ko'nikma va malaka shakillantirishdir.</p> <p>"Modern methods of water preparation" The purpose of teaching science is to provide water to urban and industrial enterprises and rational use of water sources to master's students. It is the formation of knowledge, skills and competence according to the profile of the direction in terms of the methods of their selection in accordance with certain conditions.</p>
Fanning mazmuni Course content	<p>Fanni o'qitishdan maqsad-talabalarga tabiiy suv tarkibi va xossalari, tabiiy suvlarni tozalash va cho'kindilarga ishlov berish usullari, tozalash inshootlarning tuzilishi, turlari, ishlash nazariyasi, hamda ma'lum tozalash tizim sharoitlar uchun ulardan munosiblarini tanlab hisoblashga o'rgatishdan iborat.</p> <p>The purpose of teaching science is to teach students about the composition</p>

	and properties of natural water, methods of natural water purification and sediment treatment, the structure, types, theory of operation of treatment facilities, as well as the selection of suitable ones for certain conditions.
Tavsiya qilingan yoki talab qilinadigan adabiyotlar ro'yxati Recommended Or Required Reading	<p>Asosiy adabiyotlar:</p> <ol style="list-style-type: none"> 1. Mark J.Hammer“WATER and WASTE-WATER TECHNOLOGV” Edition. London. 2013 2. Zokirov U.T. Bo'riev E.S. “Suv ta'minoti va oqova suvlarni oqizish va tozalash asoslari”. Toshkent. Bilim nashriyoti 2012 yil. 3. Yakubov K.A., Mirzaev A.B., Buriyev E.S. Suv t'aminoti va kanalizasiya tizimlari ishini tashkil etish va ulardan foydalanish. Oliy o'quv yurtlari uchun darslik. Toshkent. 2016 y.-214 b. 4. YAKOVLEV S.V.i dr. Ratsionalnoe ipolzovanie vodnykh resursov Maskova. “Vysshaya shkola” 2011 g. 400 str. 5. Degremon. Texnicheskie zapiski po problemam vody. Perevod sangliyskogo. Tom I – II. Moskva. Stroyizdat. 2013 g. 1063 str. <p>Qo'shimcha adabiyotlar</p> <ol style="list-style-type: none"> 6. Laps Ruden va Natalya Akinshina. Tabiiyresurslarniboshqarishvaulardan 7. barqarorfoydalanish. OOO “HAYOT NASHR”: Toshkent.2016 y.,218 bet. 8. WATER ENCVCLOPEDIA. DOMESTIC, MUNICIPAL, AND INDUSTRIAW.WATER SUPPLU AND WASTE DISPOSAL. Edited by Jay H. Lehr, Jack Keeley Published bu John Willy 8 Sons. Inc., Hoboken, New Jersey.Published simultaneously in Canada. 2005. 9. Nikoladze G.I. “Texnologiya ochistki prirodnykh vod”. Moskva “Vysshaya shkola” 2011 g. 480 st. 10. Jurba M.G. Vodossnabjenie. Proektirovanie sistem i soorujeniy: ucheb. posobie v 3 tomox. T.2/M.G. Jurba L.I. Sokolov J.M. Govorova. – M.:Izdvo ASV.2012 g. 496 st. 11. QMQ 2.04.02-97. Suv ta'minoti. Tashqi tarmoqlar va inshootlar. Toshkent. 1997 y., 148 bet. 12. QMQ 2.04.03-97. Oqova suvlarni oqizish va tozalash. Tashqi tarmoqlar va inshootlar. Toshkent., 1997 y. 148 bet 13. Mirzaev A.B., Axmedova F.I. va Rajabov A.X. “Ekologiya va tabiatni muhofaza qilish” fanidan . O'UM. Samarqand 2015 yil. 373 bet. 14. Salimov H.V. Ekologiya va atrof muhitni muhofaza qilish va tabiatndan foydalanish bo'yicha atama va tushunchalarning izohli lug'at., Toshkent. 2009 y., 335 bet <p>Axborot manbaalari.</p> <ol style="list-style-type: none"> 1. http://www.citycom.ru/index.php 2. http://www.politerm.com.ru/about.htm 3. http://www.ntpcentr.com/ru/ 4. http://toshlyandiya.narod.ru/index/0-80 5. http://megagum.ru/?cat=news&news_id=18
Tavsiya etilgan qo'shimcha dastur komponentlari Recommended Optional Program Components	Yo'q (bor bo'lsa yoziladi) None

Kursni o'rganish natijalari Course learning outcomes	
1	Ushbu kursni muvaffaqiyatli tamomlagan talabalar fan dasturi bo'yicha chuqur amaliy va nazariy bilimlarga ega bo'ladilar; Students who successfully complete this course; they will have in-depth practical and theoretical knowledge of the science program;
2	Suvni yumshatish usullari; Water softening methods;
3	Suvni kationalmashgich kationlar yordamida yumshatish; Water softening using cation exchange cations;

4	Suvni tuzsizlantirish va chuchuklashtirish usullari Water desalination and desalination methods;
5	Suvni tuzsizlantirish va chuchuklashtirish usullaridan foydalana olish qobiliyatiga ega bo'ladilar; They will have the ability to use water desalination and desalination methods;
6	Tabiiy suvlardan oqilona foydalana oladilar; They can use natural waters wisely;
7	O'z fikr-mulohaza va xulosalarini asosli tarzda aniq bayon eta olish malakalariga ega bo'ladilar. They will have the skills to express their opinions and conclusions clearly.

Haftalik mavzular va tegishli tayyorgarlik ishlari

Weekly Subjects and Related Preparation Studies

Hafta Week	Mavzular Themes	Resurslar Related preparation
1.	Tabiiy suvlar va ularni sifatiga qo'yiladigan talablar. Suvni sifatini yaxshilash usullari va texnologik shakillari.	1,2,3-darslik (I bob)
2.	Suvdagi aralashmalarni koagulyasiyalash. Reagentlarni eritmasini tayyorlash, zamonaviy usullaridan foydalanish	1,2,3-darslik (I bob)
3.	Suvni cho'ktirish orqali tozalash. Markazga intilma ko'ch orqali tozalash.	1,2,3-darslik (I bob)
4.	Suvni cho'ktirilgan aralashmali qatlam orqali tozalash. Suvdagi aralashmalarni flotatsiya zamonaviy usullarda tozalash.	1,2,3-darslik (I bob)
5.	Sizdirish orqali suvni tozalash. Mikrosizdirgichlar. Sizdirgichlarni (filtrlarni) turlari va ishlash jarayonlari.	1,2,3-darslik (I bob)
6.	Kontaktli tindirgichlar.	1,2,3-darslik (I bob)
7.	Suvlarni zararsizlantirishi. Dezodaratsiyalash, rangsizlantirish va achish jarayonini kamaytirish.	1,2,3-darslik (II bob)
8.	Tabiiy suvlarni ftorlash va ftorsizlantirish.	1,2,3-darslik (II bob)
9.	Tabiiy va qayta ishlatiladigan suvlarni temersizlantirish. Suvni demanganatsiyalash.	2-darslik (II bob)
10.	Xo'jalik – ichimlik suv ta'minoti majmuasini zamonaviy usullaridan foydalanib (kompleksini) tanlash va rejalashtirish.	2-darslik (II bob)
11.	Suvni gabsizlantirish usullari va jarayonlari.	2-darslik (II bob)
12.	Suvni yumshatish usullari, jarayonlari va inshootlari.	2-darslik (II bob)
13.	Tabiiy suvlarning chuchuklantirish zamonaviy usullarida tuzsizlantirish usullari va jarayonlari.	2-darslik (III bob)
14.	Tabiiy suvlarni tarkibidan kremli kislotalarni quvish usullari, texnologiyalari va jarayonlari.	2-darslik (IV bob)
15.	Suv ta'minoti tizimidagi quvur, qurilmalarni o'simta va korroziyadan saqlashning zamonaviy usullaridan foydalanish	2-darslik (IV bob)

Baholash jarayoni

Evaluation System

Mashg'ulot turi Activities	Soni Number	Baholash Percentage of Grade
Darsga qatnashish Attendance / participation	45	15
Laboratoriya ishi Laboratory		
Amaliy ish (qo'shimcha vazifa) Application		
Kurs ishi Field work		
Maxsus kurs amalyoti (ish joyida) Special course internship (work placement)		
Testlar Quizzes / studio critics		
Uyga vazifani baholash Homework assignments	5	10

Ijodiy ish (taqdimot) Presentations / jury	5	5
Loyiha ishi Project		
Seminar Seminar / workshop		
Oraliq nazorat Mid -Terms	2	20
Yakuniy nazorat Final	1	50
O'zlashtirish ko'rsatgichi Percentage of in – term studies		50
Yakuniy imtihon bahosi Percentage of final examination		50
Jami Total		100

ECTS taqsimoti			
ECTS workload table			
Topshiriqlar Activities	Soni Number	Davomiyligi (soat) Duration (hour)	Umumiy yuklama Total workload
Mashg'ulot soati Course hours	15	3	45
Laboratoriya ishi Laboratory			
Amaliy ish (qo'shimcha vazifa) application			
Kurs ishi Field work			
Mustaqil ta'lim (maslahat) Study hours out of class	15	7	105
Maxsus kurs amalyoti (ish joyida) Special course internship (work placement)			
Uyga vazifani baholash Homework assignments			
Testlar / Viktorina Quizzes / studio critics			
Loyiha ishi Project			
Ijodiy ish (taqdimot) Presentations / seminar			
Oraliq nazorat Mid – terms (Examination +Examination prep. Duration)			
Yakuniy nazorat (nazorat va nazoratga tayyorlanish soati) Final (examination +examination prep.Duration)			
		Jami yuklama Total workload	150
		Jami yuklama / 30 (soat) Total workload / 30(h)	150/30=5
		Kredit ECTS credit	5

Qo'shimcha eslatmalar Extra Notes	Yo'q\ (bor bolsa yoziladi) None
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Fan dasturi Mirozo Ulug'bek nomidagi Samarqand davlat Arxitektura-qurilish universitet Kengashining 2024 yil 30-avgustdagi 1-sonli bayonnomasi bilan ma'qullangan.

Kafedra mudiri:

Norqulov B.M.

Tuzuvchi:

Mirzayev M.N.