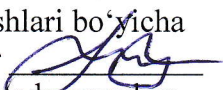


**O‘ZBEKISTON RESPUBLIKASI  
OLIV TA‘LIM, FAN VA INNOVATSIYALAR VAZIRLIGI**

**SAMARQAND DAVLAT ARHITEKTURA – QURILISH UNIVERSITETI**

**“KELISHILGAN”**  
o‘quv ishlari bo‘yicha  
prorektor   
M.T. Shodmonqulov  
Ro‘yxatga olindi: № 203/a  
«30» avgust 2024 yil



**JISMONIY BLOK OPERATSIYALARI**

**FAN DASTURI**

- Bilim sohasi:** 700 000 – Muhandislik, ishlov berish va qurilish sohalari
- Ta‘lim sohasi:** 710 000 – Muhandislik ishi
- Ta‘lim yo‘nalishi:** 60710400 – Ekologiya va atrof-muhit muhandisligi  
(tarmoqlar va sohalar bo‘yicha)

**Kurs ma'lumotlari**  
Course Information Form

<b>Modul kodi</b> Code ATM 3060	<b>O'quv yili</b> 2024-2025	<b>Semestr</b> 5	<b>ECTS – Kreditlar</b> 5-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>Jismoniy blok operatsiyalari</b>	5-semestr -150	5-semestr -3	-	-	5-semestr -7

<b>Dastlabki shart</b> Prerequisite	<b>Yo'q</b> None
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<b>Semestr</b> Semestr	<b>Kuzgi</b> Autum
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<b>Kurs tili</b> Course language	<b>O'zbek, Rus</b> Uzbek, Russian
<b>O'quv kursi</b> Level of Course	<b>Uchinchi kurs</b> Third Cycle
<b>Ta'lim yo'nalishlari</b> Course type	60710400 – Ekologiya va atrof-muhit muhandisligi (tarmoqlar va sohalar bo'yicha) 60710400 – Ecology and environmental engineering (by sectors and fields)
<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
<b>Kursga ma'sul</b> Cours Coordinator	B.O. Xushvaktov
<b>O'qituvchilar</b> Instructor(s)	B.O. Xushvaktov
<b>Yordamchilar</b> Asistant(s)	B.O. Xushvaktov

<b>Fanni o'qitishdan maqsad</b> Course objectives	<p>bakalavrlarda shahar oqova suvlarini tozalashda hosil bo'ladigan oqova suvlarni oqizish, tozalash usullari, ishlatiladigan inshootlarning tuzilishi, turlari, ishlatilish ko'lami, hisoblash asoslari va ularni muayyan sharoitlarga mos holda tanlash usullari bo'yicha yo'nalish profiliga mos bilim, ko'nikma va malaka shakllantirishdir.</p> <p>in Bachelors, it is the formation of knowledge, skills and competencies corresponding to the orientation profile on the drainage of wastewater generated in urban wastewater treatment, methods of treatment, the structure, types of structures used, the scope of use, the basics of calculation and methods of selecting them in accordance with certain conditions.</p>
<b>Fanning mazmuni</b> Course content	oqova suvning tarkibi va xossalari, oqova suvlarni oqizish, tozalash va cho'kmalarga ishlov berish usullari, tozalash inshootlarning tuzilishi, turlari, ishlash nazariyasi, hamda ma'lum tozalash tizim sharoitlar uchun ulardan munosiblarini tanlab hisoblashga o'rgatishdan iborat, uning kelgusida ishlab-chiqarish faoliyatida, ilmiy-texnikaviy taraqqiyot jarayonida uchraydigan turli masalalar va yangiliklarni mustaqil ravishda hal qilishida asosiy omillarni hayotga tadbiq etishdan iboratdir.



	<p>the composition and properties of wastewater, methods of wastewater discharge, treatment and sediment treatment, structure, types, theory of operation of treatment facilities, as well as a certain treatment system consists in teaching to selectively calculate the appropriate of them for conditions, bringing to life the main factors in its independent solution of various issues and innovations found in further production activities, in the process of scientific and technical.</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.«Suv va suvdan foydalanish to'g'risida»gi O'zbekiston Respublikasi Qonuni. – T.: O'zbekiston, 1993.</li> <li>2.Oqova suvlarni tozalash texnologiyasi:texnika oliy yurtlari uchun darslik / S.M.Turobjonov,T.Tursunov, X.Pulatov.-Toshkent, Musiqa, 2010.- 256 b.</li> <li>3.Kanalizatsiya / S.V.Yakovlev, YA.A.Karelin, A.N.Jukov, S.K.Kolobanov. Uchb.dlya vuzov.Izd.5-e pererab.i dop.M.:Stroyizdat.-1984.680 s.</li> <li>4.Vodootvedenie / YU.V.Voronov, E.V.Alekseev, V.P.Salomeev, E.A.Pugachyov. Uchebnik.-M.:Infra-M,2008-415 s.</li> <li>5.Ochistka proizvodstvennykh stochnyx vod: Uchebn.pos. /S.V.Yakovlev, YU.M.Laskov, YU.V.Voronov.-M.:Stroyizdat,1979.-320 s.</li> <li>6.Bo'riev E.S., YAKubov K.A.Oqova suvlarni oqizish tarmoqlari. Bakalavriat ta'lim yo'nalishi uchun ta'lim yo'nalishi uchun O'quv qo'llanma.Toshkent, IQBOL. 2014 y. 220 b.</li> <li>7.Suv ta'minoti va kanalizatsiya tizimlari ishini tashkil etish va ulardan foydalanish. Oliy o'quv yurtlari uchun darslik./K.A.Yakubov, A.B.Mirzayev, E.S.Bo'riyev, -Toshkent, 2016 y.-212 b.</li> <li>8.Oqova suvlarni tozalash. Oliy o'quv yurtlari uchun darslik./K.A.Yakubov, E.S.Bo'riyev, -Toshkent, 2020 y.-220 b.</li> </ol> <p><b>Qo'shimcha adabiyotlar:</b></p> <ol style="list-style-type: none"> <li>9. QMQ 2.04.03-97. Suv oqova. Tashqi tarmoqlar va inshootlar. O'z davar xurqum, Toshkent. 1997.</li> <li>10. A.A.Lukin, N.A.Lukin. Tablitsy dlya gidravlicheskogo rascheta kanalizatsionnykh setey po formule akad.N.N.Pavlovskogo. Izd.4-edopyu M., Stroyizdat, 1974.-156 s.</li> <li>11. Yakubov Q.A., Bo'riyev E.S. "Oqova suvlarni tozalash". Darslik. –T.: Innovasion rivojlanish nashriyot-matbaa uyi, 2020 yil. -220 b.</li> <li>12. Водоснабжение и очистка сточных вод: учеб. для вузов [Текст] / С. В. Яковлев, Ю. В. Воронов. – М.: АСВ, 2002. – 707 с.</li> <li>13. QM Q 2.04.03-97. Kanalizatsiya. Tashqi tarmoqlar va inshootlar. o'zb. Resp. davlat arx. qurilish qo'mitasi. Toshkent. 1997. 148 bet l.</li> </ol> <p><b>Axborot manbalari:</b></p> <ol style="list-style-type: none"> <li>14. <a href="http://www.politerm.com.ru/arctgis/engineer.htm">http://www.politerm.com.ru/arctgis/engineer.htm</a></li> <li>15. <a href="http://www.cadmater.ru/articles/19_fluidflow.cfm">http://www.cadmater.ru/articles/19_fluidflow.cfm</a></li> <li>16. <a href="http://www.stroing.ru/128">http://www.stroing.ru/128</a></li> <li>17. <a href="http://www.dataplus.ru/Industries/3PIPE/16_hidro.htm">http://www.dataplus.ru/Industries/3PIPE/16_hidro.htm</a></li> <li>18. <a href="http://www.citycom.ru/publications/jul-1998.html">http://www.citycom.ru/publications/jul-1998.html</a></li> <li>19. <a href="http://www.kbsu.ru/Research/sapr.htm">http://www.kbsu.ru/Research/sapr.htm</a></li> <li>20. <a href="http://www.politerm.com.ru/zuluhydro/index.htm">http://www.politerm.com.ru/zuluhydro/index.htm</a>.</li> <li>21. <a href="http://www.politerm.com.ru/zuluhydro/wh/waterhammer.htm">http://www.politerm.com.ru/zuluhydro/wh/waterhammer.htm</a></li> <li>22. <a href="http://aquart.ru/production/doc.asp?article=gidrrasch&amp;doc=doc&amp;new=yes">http://aquart.ru/production/doc.asp?article=gidrrasch&amp;doc=doc&amp;new=yes</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>

<p><b>Kursni o'rganish natijalari</b> Course learning outcomes</p>	
1	<p>oqova suvlarning turlari, ularning hosil bo'lish sharoitlari, tarkibi va xossalari; aholi yashash joylari va sanoat korxonalarida oqova suvlarni oqizish tarmoqlarining tizimlari, sxemalari va ularga oqova suvlarni qabul qilish shartlarini; oqova suvlarni oqizish tarmoqlarini loyihalash va ularni gidravlik hisobini; maishiy va ishlab chiqarish oqova suvlarni oqizish tarmoqlarini; maishiy va ishlab chiqarish oqova suvlarni oqizish tarmoqlarining hisobiy sarflarini aniqlashni; oqova suvlarni oqizish tarmoqlarining bo'ylama profillarini; oqova suvlarni havzalarga qo'shish shartlarini; oqova suvlarni tozalash usullari va inshootlarini <i>bilishi kerak</i>;</p> <p>Types of wastewater, the conditions, composition and properties of their formation; systems, schemes of</p>



	wastewater drainage networks of settlements and industrial enterprises and the conditions for receiving wastewater into them; design of wastewater drainage networks and hydraulic accounting for them; discharge networks of household and production; determination of accounting costs of household and production wastewater drainage networks; longitudinal profiles of wastewater drainage networks; conditions for must know;
2	O'zbekiston iqlim sharoitida oqova suvlarni tozalash inshootlarini loyihalash, qurish, rekonstruksiya va ekspluatatsiya qilishning o'ziga hos xususiyatlari; Features of the design, construction, reconstruction and operation of wastewater treatment facilities in the climatic conditions of Uzbekistan;
3	bozor iqtisodiyoti sharoitida oqova suvlarni tozalash tizimlarida yangi, raqobatbardosh, texnologiyalar sxemalarini ishlab chiqish bo'yicha <i>ko'nikma va tajribaga ega bo'lishi</i> ; To have skills and experience in developing new, competitive, technology schemes in wastewater treatment systems in a market economy;
4	oqova suvlarni tozalash inshootlarini gidravlik hisoblashda zamonaviy axborot kommunikatsiya vositalari, xususan kompyuter texnikasi va xalqaro internet tizimidan foydalanish usullarini <i>bilishi va ulardan foydalana olishi kerak</i> ; In the hydraulic calculation of sewage treatment facilities, modern information communication tools, in particular computer equipment and the international internet system, should be able to know and use
5	oqova suvlarni tozalash inshootlaridagi oqovasuv sarflarini aniqlash va gidravlik hisoblash; inshootlar tanlash; yomg'ir suvlari jadalligi va sarfini hisoblash; maishiy, yomg'ir va umumoqizuv oqova suvlarini oqizish tarmoqlarini loyihalash va hisoblash; oqova suvlarni havzalarga oqizish uchun shartli tozalashni aniqlash; oqova suvlarni tozalashda hosil bo'ladigan cho'kmalarga ishlov berish uchun inshootlar tanlash malakalariga <i>ega bo'lishi kerak</i> ; Determination and hydraulic calculation of wastewater consumption in sewage treatment facilities; selection of structures; calculation of the intensity and consumption of stormwater; design and calculation of household, rain and general sewage drainage networks; determination of conditional treatment for sewage discharge into basins; selection of structures for treatment of sediments formed in wastewater treatment should have the qualifications;

## Haftalik mavzular va tegishli tayyorgarlik ishlari

Weekly Subjects and Related Preparation Studies

Hafta Week	Mavzular Themes	Resurslar Related preparation
1.	Kirish. Suv va oqava suvlarni tozalashda fizikaviy tozalash qurilmalari, panjaralar va qum tuzoqlari.	2 - adabiyot
2.	Balanslash hovuzlari, tez va sekin aralashtirish birliklari.	1,4,7-adabiyotlar
3.	Yog'ingarchilik nazariyasiga kirish.	1,6,7-adabiyotlar
4.	Donador (1-tur) va flokkulent (2-toifa) yog'ingarchilik nazariyalari.	1, 5, 7, 9 - adabiyotlar
5.	Nogiron (mintaqaviy) sedimentatsiya nazariyalari va cho'kma havzalari.	1, 5, 7, 9 - adabiyotlar
6.	Sedimentatsiya hovuzlari.	1, 7, 9 - adabiyotlar
7.	Flotatsiya va flotatsiya birliklari	7, 9 - adabiyotlar
8.	Oqova suvlarni fil'trlash	7, 9 - adabiyotlar
9.	Filtrlash nazariyalari.	1,7,8,9 - adabiyotlar
10.	Filtrlash nazariyalari va qum filtrlarini loyihalash.	3,7,8,9 - adabiyotlar
11.	Qum filtrlarini loyihalash.	5,7,8,9 - adabiyotlar
12.	Gazni uzatish va shamollatish mexanizmi.	2, 7,8,9 - adabiyotlar
13.	Shamollatish tizimlari (2-viza).	1,7,8 - adabiyotlar
14.	Ventilyatsiya tizimlari.	7,8,11 - adabiyotlar
15.	Tozalash shahobchalarini joylarda joylashtirish	7,8,12 - adabiyotlar

Baholash jarayoni Evaluation System		
Mashg'ulot turi Activities	Soni Number	Baholash Percentage of Grade
Darsga qatnashish Attendance / participation	30	15
Laboratoriya ishi		

Laboratory		
<b>Amaliy ish (qo'shimcha vazifa)</b> Application		
<b>Kurs ishi</b> Field work		
<b>Maxsus kurs amalyoti (ish joyida)</b> Special course internship (work placement)		
<b>Testlar</b> Quizzes / studio critics		
<b>Uyga vazifani baholash</b> Homework assignments	5	10
<b>Ijodiy ish (taqdimot)</b> Presentations / jury	5	5
<b>Loyiha ishi</b> Project		
<b>Seminar</b> Seminar / workshop		
<b>Oraliq nazorat</b> Mid -Terms	2	20
<b>Yakuniy nazorat</b> Final	1	50
<b>O'zlashtirish ko'rsatgichi</b> Percentage of in – term studies		50
<b>Yakuniy imtihon bahosi</b> Percentage of final examination		50
<b>Jami</b> Total		100

<b>ECTS taqsimoti</b> ECTS workload table			
<b>Topshiriqlar</b> Activities	<b>Soni</b> Number	<b>Davomiyligi (soat)</b> Duration (hour)	<b>Umumiy yuklama</b> Total workload
<b>Mashg'ulot soati</b> Course hours	30	5	150
<b>Laboratoriya ishi</b> Laboratory			
<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	5	2	10
<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	5	1	5
<b>Oraliq nazorat</b> Mid – terms (Examination +Examination prep. Duration)	2	10	20
<b>Yakuniy nazorat (nazorat va nazoratga tayyorlanish soati)</b> Final (examination +examination prep.Duration)	1	15	15
<b>Jami yuklama</b> Total workload			150
<b>Jami yuklama / 30 (soat)</b>			150/30=5

Total workload / 30(h)	
<b>Kredit</b> ECTS credit	5

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

**Kafedra mudiri:**

Norqulov B.M.

**Tuzuvchi:**

Xushvaktov B.O.