

# Environmental Risk Assessment and Mitigation on Cultural Heritage assets in Central Asia

## ERAMCA

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#### Available teaching material and teaching methods

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## 1. Introduction

Task 2.3 compiles the available teaching materials and teaching methods of KPITTU, TTU, TTPU and SamSACII. Teaching methods were evaluated. Study materials, available books, lecture notes, practical materials and training laboratories were analysed.

## 2. Review of available teaching material and teaching methods of KPITTU

**Table 1. LIST OF LABORATORIES AT THE DEPARTMENT OF CONSTRUCTION OF KPITTU**

No.	Name	Short description
1.	Construction structures and materials	Conducting laboratory tests, measurements and other types of studies of samples (samples) of building materials and structures in accordance with the requirements of technical regulations, state standards and other regulatory legal acts of the Republic of Tajikistan.
2.	Building physics	Performing laboratory work on thermal protection of buildings, optimal light conditions and soundproofing and interior partitions and floor ceilings.
3.	Geodesy	The laboratory conducts practical training and laboratory work with geodetic instruments.

**Table 2. UTILIZATION OF LABORATORIES BY DISCIPLINE**

Disciplines	Name of laboratories		
	Construction structures and materials	Building physics	Geodesy
Groundwater protection against pollution and depletion			
Soil pollution control			
Drainage network design			
Engineering geology			
Seismology			
Design in hot climates and earthquake resistance of buildings			
Calculation of buildings and structures taking into account seismic effects			
Reinforced concrete structures.	+		
Metal structures and welding	+		
Construction Materials	+		
National Building Constructions			
Structural Dynamics			
Structural stability and thin-walled spatial structures			
Constructive and heat-insulating materials in construction		+	
Architectural and building structures			
Reconstruction of buildings and structures			
Survey of buildings and structures	+		
Architecture			

Disciplines	Name of laboratories		
	Construction structures and materials	Building physics	Geodesy
Architecture of low buildings			
Basics of architectural design			
Architectural design of multifunctional buildings			
Theory of Architecture and Urban Planning			
Engineering cartography			+
Fundamentals of Surveying and Terrain Planning			
Engineering Geodesy			+

**Table 3. TEACHING METHOD**

No.	Name	Short description
1.	Lecture	This is one of the most common ways to convey information to the target listener. Oral presentation has long been used for the simultaneous training of a large number of people. A correctly structured lecture activates mental activity, provides an emotional connection between the listener and the speaker, and contributes to a better perception of the material. This learning style is effective in teaching the humanities and natural sciences as well as the exact disciplines.
2.	Explanation	This is a cognitive procedure aimed at enriching and deepening knowledge about the phenomena of the real world by including these phenomena in the structure of certain connections, relations and dependencies, which makes it possible to reveal the essential features of this phenomenon. In the simplest case, the subject of explanation is individual empirically recorded facts.
3.	Study discussion	This is the most developed organizational form of educational dialogue, which allows the teacher and students to come to mutually agreed solutions to complex educational problems, bringing together and clarifying different positions and points of view on the problems under discussion, achieving mutual understanding and recognition of the right of each to his own special position and a different point of view.
4.	Working with literature	This type of sources reflects the latest state of the art and therefore deserves attention. (note-taking, drafting a text plan, testifying, reviewing, drawing up diagrams)
5.	Visual methods	Visual teaching methods are understood as such methods in which the assimilation of educational material is significantly dependent on the visual aids and technical means used in the learning process. (illustration, demonstration, educational laboratory experiment).
6.	Exercises	This is a teaching method that provides for targeted, repeated repetition of certain actions or operations by students in order to form skills and abilities. (oral exercises, written exercises, graphic exercises, laboratory practice exercises).
7.	Laboratory work	This is a teaching method in which students, under the guidance of a teacher and according to a predetermined plan, do experiments or perform certain practical tasks.
8.	Practical work	This is a form of organization of the educational process, involving the performance by students on assignment and under the guidance of a teacher, one or more practical work. The didactic goal of practical work is to form students' professional skills, as well as practical skills necessary for studying subsequent academic disciplines.

No.	Name	Short description
9.	Independent work	This is a form of training in which the student learns the necessary knowledge, master's skills and abilities, learns to work systematically, systematically, think, and forms his own style of mental activity. It differs from other forms of education in that it presupposes the student's ability to organize his own activities in accordance with the assigned or arisen task.
10.	Seminar	This is one of the most effective methods of teaching. Seminars are usually preceded by lectures that define the topic, nature and content of the seminar.
11.	Creative works	This is the result of human creative efforts. This concept includes fine arts, literature, painting, music, choreography, etc. Creative work implies the creation of something new and unique (it is unlikely that two people will create the same work). The term is mentioned in the laws of different states and is widespread. Also often used in the context of copyright.

**Table 4. USE OF TEACHING METHODS BY DISCIPLINE**

Disciplines	No. Teaching Methods										
	1	2	3	4	5	6	7	8	9	10	11
Groundwater protection against pollution and depletion	+	+	+	+	+	+		+	+		
Soil pollution control	+	+	+	+	+	+		+	+		
Drainage network design	+	+	+	+	+	+		+	+		
Engineering geology	+	+	+	+	+	+		+	+		
Seismology	+	+	+	+	+	+		+	+		
Design in hot climates and earthquake resistance of buildings	+	+	+	+	+	+		+	+		
Calculation of buildings and structures taking into account seismic effects	+	+	+	+	+	+		+	+		
Reinforced concrete structures.	+	+	+	+	+	+	+		+		
Metal structures and welding	+	+	+	+	+	+	+		+		
Construction Materials	+	+	+	+	+	+	+		+		
National Building Constructions	+	+	+	+	+	+		+	+		
Structural Dynamics	+	+	+	+	+	+		+	+		
Structural stability and thin-walled spatial structures	+	+	+	+	+	+		+	+		
Constructive and heat-insulating materials in construction	+	+	+	+	+	+	+	+	+		
Architectural and building structures	+	+	+	+	+	+		+	+		
Reconstruction of buildings and structures	+	+	+	+	+	+		+	+		
Survey of buildings and structures	+	+	+	+	+	+	+	+	+		
Architecture	+	+	+	+	+	+		+			+
Architecture of low buildings	+	+	+	+	+	+		+			+
Basics of architectural design	+	+	+	+	+	+		+			+
Architectural design of multifunctional buildings	+	+	+	+	+	+		+			+
Theory of Architecture and Urban Planning	+	+	+	+	+	+		+			+
Engineering cartography	+	+	+	+	+	+	+			+	
Fundamentals of Surveying and Terrain Planning	+	+	+	+	+	+		+			+
Engineering Geodesy	+	+	+	+	+	+	+			+	

List of basic teaching materials.

1. Aizenberg Ya. M., Kodysh E.N. and others. Earthquake resistant multi-storey buildings with a reinforced concrete frame, Moscow, 2012.
2. Airapetov G.A. and other Building materials. Rostov-on-Don, 2009
3. Alexandrov A.V. etc. Construction mechanics. Thin-walled spatial systems, M.:2016
4. Almazov V.O. Design of reinforced concrete structures according to Euronorms, Moscow, 2011.
5. Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow, 2010.
6. Analysis of contaminated soil and hazardous waste [Electronic resource]: a practical guide / Yu. S. Drugov, A.A Rodin. - 4th ed. - Electron. text data. (1 pdf file: 472 p.). - M.: BINOM. Knowledge laboratory, 2015.
7. Badin G.M., Tanicheva N.V. Strengthening of building structures during the reconstruction and overhaul of the building, M.: 2013.
8. Bayer V.E. Architectural materials science, Moscow, 2012.
9. Banov M.D., Kazakov Yu.V. and others. Welding and cutting of materials, Moscow, 2010.
10. Drummers Yu.G. Building materials and products, M.: 2010.
11. Batysheva A.I., Smolkina A.A. (ed.) Materials Science and Technology of Materials, Moscow, 2016.
12. Bezukhov NI et al. Stability and dynamics of structures in examples and tasks, Moscow, 1987.
13. Belov V.V., Petropavlovskaya V.B. Building materials, Moscow, 2014.
14. Blagoveshchensky F.A., Bukina E.F. Architectural structures, M.: 2014.
15. Bobrov Yu.L., Ovcharenko E.G. and other. Thermal insulation materials and structures, Moscow, 2010.
16. Bobrov Yu.L., Ovcharenko E.G., Shoikhet B.M., Petukhova E.Yu. Thermal insulation materials and structures, M.: 2010.
17. Bronte S. Gorodok, Moscow, 1990.
18. Bruevich P.N., Samoshkin E.M. Geodesy, M.: 1985.
19. Veselovsky V.G. et al. Architecture of Soviet Tajikistan, Moscow, 1986.
20. Viduev NG, Baran PI and others. Geodetic alignment works, Moscow, 1973.
21. Vilchik N. P. Architecture of buildings, Moscow, 2012.
22. Vyshemirsky VS and others. Theoretical and methodological issues of oil and gas geology, Moscow, 1981.
23. V.V. Gabrusenko Basics of calculating reinforced concrete in questions and answers, M.: 2014.
24. Giyasov A. Architectural and constructive design of civil buildings, Dushanbe, 2014.
25. Giyasov A. Architectural structures of low-rise civil buildings, Dushanbe, 2009.
26. P. P. Gnedich Art history. Painting. Sculpture. Architecture, M.: 2009.
27. Goshi B. Statics and dynamics of knowledge. M.: 1984.
28. Gusev N.M., Makarevich V.G. Light architecture, Moscow, 1973.
29. Davydova OV Landscape design: textbook / Davydova O.V. –Chelyabinsk: SUSU, LLC "Publishing house RECPOL", 2008-80 p.
30. Dadoboev A.I. Constructions and Building. lectures, Khujand, 2018.
31. G. V. Devyataeva Technology of reconstruction and modernization of buildings, Moscow, 2011.
32. Dobromyslov A.N. Examples of dynamic calculations of reinforced concrete structures, Moscow, 2013.
33. Dobromyslov A.N. Calculation of reinforced concrete structures using the program "Lira", M.: 2015.
34. Dorkin V.V., Ryabtseva M.P. Metal structures, M.: 2012.
35. Drainage systems and treatment facilities, "Stroyinform", 2007
36. Drozd M.I. Materials Science, M.: 2017.
37. Zaikin A.I. Reinforced concrete structures of one-story industrial buildings, Moscow, 2007.
38. Zaitsev Yu. V., Industries V.F. Building structures, Moscow, 1985.
39. Ziangirov R.S. and other, Engineering geology in construction, M.: 1986.
40. Zokirov R.Sh. Fundamentals of urban planning, Khujand:, 2018.
41. Zokirov R.Sh. Architect design (level 1-3). Methodical instructions for independent work, Khujand, 2017.
42. Zokirov R.Sh. History of architecture. Methodical instructions, Khujand, 2019.
43. Ikromova AM, Muhammad-Rizoeva ND Curriculum - a method of English (professional) language for students of the Faculty of "Construction and Architecture" of higher education, Khujand, 2015.
44. Kabantsev O. V., CD-ROM. Calculation and design of multi-storey and high-rise monolithic reinforced concrete buildings, 2013.
45. Kalinin V.M., Sokova S.D., Topilin A.N. Inspection and testing of structures of buildings and structures, Moscow, 2012.
46. Kirnev A.D., Volosukhin V.A. and others. Technology of erection of buildings and structures from monolithic reinforced concrete for engineering purposes and in special conditions of construction, Rostov-on-Don, 2008.
47. Kolmogorov A.G., Plevkov V.S. Calculation of reinforced concrete structures according to Russian and foreign standards, Moscow, 2014.

48. Kolpaev A.P. and other Geodesy, part 2, Moscow, 1958.
49. Kosenko I.S. Hanging roof structures, Moscow, 1966.
50. Kosygina Yu.A. Geological bodies, Moscow, 1986.
51. Krasnoshchekova N.S. Formation of the natural framework in the master plans of cities, Moscow, 2010.
52. Krasovsky P.S. Building materials, Moscow: 2016.
53. Kuvshinov Yu.Ya. Energy saving in the system of ensuring the microclimate of buildings, Moscow, 2010.
54. Kudishin Yu.I. and others. Metal structures, Moscow, 2010.
55. V. S. Kuznetsov. Reinforced concrete and stone structures, Moscow, 2014.
56. V.S. Kuznetsov. Reinforced concrete structures of multi-storey buildings. Course and diploma design, Moscow, 2015.
57. Kusainov A.A., Ilyichev V.A. et al. Design of earthquake-resistant structures with dry construction systems, Moscow, 2013.
58. Larchenko M.P., Milovatskaya T.N. and others. Tests and tasks for the course of engineering geodesy, Moscow, 2013.
59. Livanov M.M. Geodesy in construction, Moscow, 1973.
60. Lobov N. A. Dynamics of hoisting cranes, M.: 1987.
61. Lukhyanov V.F. Calculations of the accuracy of engineering and geodetic works, Moscow, 1990.
62. Mayilyan R.L., Mayilyan D.R., Veselev Yu.A. Building structures, Rostov-on-Don, 2010
63. Maklakova T.G., Nanasova S.M. and others. Architecture, Moscow, 2009.
64. Maklakova T.G., Nanasova S.M. Constructions of civil buildings, Moscow, 2012.
65. Malbiev S.A., Teloyan A.L. and others. Building structures: metal structures, reinforced concrete and stone structures, wood and plastic structures, Moscow, 2010.
66. Mandrikov A.P. Examples of calculation of reinforced concrete structures, M.: 2007.
67. Maslov V. I. Welding works, Moscow, 2002.
68. Maslov N.N. Fundamentals of soil mechanics and engineering geology, Moscow, 1968.
69. Methodological guide for the design of architectural and planning solutions for multifunctional buildings and complexes, Moscow, 2019.
70. Expenditure element norms for construction works. Collection № 9. Metal construction structures, Dushanbe, 2008.
71. Mindeli E.O. Drilling operations in underground mining of useful fossils, M.: 1966.
72. Moskalev NS and others. Metal constructions, including welding, M.: 2014.
73. Munchak L.A. Construction of a low-rise residential house. (course design), M.: 2012.
74. Nanasova SM, Rylko MA, Nanasov IM Design of low-rise houses, M.: 2014.
75. Nizomov J. Construction mechanics. Dynamics of objects, Dushanbe, 1991.
76. Oripov D. Building structures-2. Collection of tasks, Khujand, 2017.
77. Otto Frey Hanging coverings of their forms and designs, Moscow, 1960.
78. Pavlov F.F., Mashkevich V.P., Fedorov B.D. Geodesy, Moscow, 1961.
79. Peshkovsky L.M., Pereskokova T.M. Engineering geology. Textbook for university students, Moscow, 1982.
80. Plevkov V.S., Malganov A.I., Baldin I.V. Reinforced concrete and stone structures of earthquake-resistant buildings and structures, Moscow, 2012.
81. Polishchuk V.P., Chernyaeva R.P. Design of reinforced concrete structures for industrial buildings, Moscow, 2014.
82. Portaev D. The calculation and design of monolithic prestressed structures of civil buildings, Moscow, 2011.
83. Razumova O.S. (ed.) Engineering geodesy in construction, Moscow, 1984.
84. Roslyakov A.V. OKS No. 7: architecture, protocols, application, Moscow, 2008.
85. Samarin O.D. Fundamentals of ensuring the microclimate of buildings, Moscow, 2014.
86. Safonov G.N. Labor protection in underground mining, M.: 1990.
87. Semenov A.A. Metal structures., Calculation of elements and connections using the SCAD OFFICE software package, M.: 2014.
88. Serbin E.P., Setkov V.I. Building structures, Moscow, 2010.
89. Setkov V.I., Serbin E.P. Building structures. Calculation and design, Moscow, 2012.
90. Seferov G.G. et al. Materials Science, M.: 2011.
91. Seferov G.G., Batienvkov V.T. et al. Materials Science, M.: 2011.
92. Sinityn S. B. Lectures on the theory of seismic stability, Moscow, 2014.
93. System of design documentation for construction. Rules for the implementation of design and working documentation for metal structures. GOST 21.502-2007.
94. Smirnov AF and others. Construction mechanics. Dynamics and stability of structures, Moscow, 1984.
95. Sysoev K.A. Fundamentals of Geodesy and Cartography, M.: 1976.
96. Sysoeva E.V. Architectural structures of low-rise buildings, Moscow, 2012.
97. Sytnin V.S. Construction geodesy, Moscow, 1974.

98. Theodoronsky V.S., Bogovaya I.O. Landscape architecture, Moscow, 2010.
99. Timofeev I.G. Engineering protection of territories, Moscow, 1997.
100. Usmonov, Sh. Z. Architecture of civil and industrial buildings: educational-methodical manual / Sh. Z. Usmonov; KPITTU - Khujand: 2018. - 60p.
101. Fedorov V.V. Reconstruction and restoration of buildings, Moscow, 2011.
102. Fedorov V.V., Fedorova N.N., Sukharev Yu.V. Reconstruction of buildings structures and urban development, Moscow, 2011.
103. Khakimov N.K., Khakimov M.N. Geodesy, Dushanbe, 2016
104. Khakimov Kh.Kh. History of architecture. Volume 2, Khujand, 2005.
105. Khakimov Kh.Kh. History of architecture. Volume 2, Khujand, 2018.
106. Khakimov Kh.Kh. History of architecture. Volume 3, Khujand, 2008.
107. Khakimov Kh.Kh. History of architecture. Volume 3, Khujand, 2018.
108. N. V. Khramtsov. Building materials science. Laboratory workshop, M.: 2011.
109. Tsai T.N., Borodich M.K., Mandrikov A.P. Building structures, M.: 1984.
110. Cherepakhin A. A. Materials Science, Moscow: 2004.
111. Sharipov L.Sh. Constructions and ohanubetoni. Part 3, Dushanbe, 2013.
112. Sharipov L. Sh. Constructions and ohanubetoni, Part 1, Dushanbe, 2011.
113. Sharipov L.Sh. Constructions and ohanubetoni, Part 2, Dushanbe, 2011.
114. Shilov P.I. Geodesy, Moscow, 1963.

**Table 5. USE OF TEACHING MATERIALS BY DISCIPLINE**

No.	Names of disciplines	Teaching materials
1	Groundwater protection against pollution and depletion	Mindeli E.O. Drilling operations in underground mining, Moscow, 1966.
		Safonov G.N. Labor protection in underground mining, Moscow, 1990.
		Timofeev I.G. Engineering protection of territories, Moscow, 1997.
2	Soil pollution control	Analysis of contaminated soil and hazardous waste [Electronic resource]: a practical guide / Yu. S. Drugov, A. A. Rodin. - 4th ed. (email). - Electron. text data. (1 pdf file: 472 p.). - M.: BINOM. Knowledge laboratory, 2015.
3	Drainage network design	Drainage systems and treatment facilities, "Stroyinform", 2007
4	Engineering geology	Ziangirov R.S. and other Engineering geology in construction, M.: 1986.
		Maslov N.N. Fundamentals of soil mechanics and engineering geology, Moscow, 1968.
		Peshkovsky L.M., Pereskokova T.M. Engineering geology. Textbook for university students, Moscow, 1982.
		Kosygina Yu.A. Geological bodies, M.: 1986.
		Vyshemirsky VS et al. Theoretical and methodological issues of oil and gas geology, Moscow, 1981.
5	Seismology	Aizenberg Ya.M., Kodysh E.N. and others. Earthquake resistant multi-storey buildings with a reinforced concrete frame, Moscow, 2002.
		Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow, 2010.
		Kusainov A.A, Ilyichev V.A. Design of earthquake-resistant structures with dry construction systems, Moscow, 2013.

No.	Names of disciplines	Teaching materials
6	Design in hot climates and earthquake resistance of buildings.	<p>Kuvshinov Y.Y. Energy saving in the building microclimate system, Moscow, 2010.</p> <p>Samarin O.D. Fundamentals of ensuring the microclimate of buildings, Moscow, 2014.</p> <p>Plevkov V.S., Malganov A.I., Baldin I.V. Reinforced concrete and stone structures of earthquake-resistant buildings and structures, Moscow, 2012.</p> <p>Sinitsyn S.B. Lectures on the theory of seismic stability, Moscow, 2014.</p>
7	Calculation of buildings and structures taking into account seismic effects.	<p>A.P. Mandrikov Examples of calculation of reinforced concrete structures, M.: 2007.</p> <p>Kolmogorov A.G., Plevkov V.S. Calculation of reinforced concrete structures according to Russian and foreign standards, Moscow, 2014.</p> <p>Semenov A.A. Metal structures., Calculation of elements and connections using the SCAD OFFICE software package, M .: 2014.</p> <p>D.V. Portaev Calculation and design of monolithic prestressed structures of civil buildings, Moscow, 2011.</p> <p>Dobromyslov A.N. Calculation of reinforced concrete structures using the program "Lira", M .: 2015.</p> <p>Aizenberg Y.M., Kodysh E.N. and others. Earthquake resistant multi-storey buildings with a reinforced concrete frame, Moscow, 2002.</p> <p>Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow, 2010.</p> <p>Kusainov AA, Ilyichev VA et al. Design of earthquake-resistant structures with dry construction systems, Moscow, 2013.</p>
8	Reinforced concrete structures.	<p>A.P. Mandrikov Examples of calculation of reinforced concrete structures, M .: 2007.</p> <p>Kirnev A.D., Volosukhin V.A. and others. Technology of erection of buildings and structures from monolithic reinforced concrete, engineering purposes and in special conditions of construction, Rostov-on-Don, 2008.</p> <p>Aizenberg Y.M., Kodysh E.N. and others. Earthquake-resistant multi-storey buildings with a reinforced concrete frame, Moscow, 2012.</p> <p>Almazov V.O. Design of reinforced concrete structures according to Euronorms, Moscow, 2011.</p> <p>V.V. Gabrusenko Basics of calculating reinforced concrete in questions and answers, M .: 2014.</p> <p>Dobromyslov A.N. Examples of dynamic calculations of reinforced concrete structures, Moscow, 2013.</p> <p>Zaikin A.I. Reinforced concrete structures of one-story industrial buildings, Moscow, 2007.</p>

No.	Names of disciplines	Teaching materials
		<p>O.V. Kabantsev CD-ROM. Calculation and design of multi-storey and high-rise monolithic reinforced concrete buildings, 2013.</p> <p>Malbiev S.A., Teloyan A.L. and others. Building structures: metal structures, reinforced concrete and stone structures, wood and plastic structures, Moscow, 2008.</p> <p>Plevkov V.S., Malganov A.I., Baldin I.V. Reinforced concrete and stone structures of earthquake-resistant buildings and structures, Moscow, 2012.</p> <p>Kolmogorov A.G., Plevkov V.S. Calculation of reinforced concrete structures according to Russian and foreign standards, Moscow, 2014.</p> <p>Polishchuk V.P., Chernyaeva R.P. Design of reinforced concrete structures for industrial buildings, Moscow, 2014.</p> <p>Kuznetsov V.S. Reinforced concrete and stone structures, Moscow, 2014.</p> <p>Dobromyslov A.N. Calculation of reinforced concrete structures using the software "Lira", M.: 2015.</p> <p>Kuznetsov V.S. Reinforced concrete structures of multi-storey buildings. Course and diploma design, M.: 2015.</p> <p>Sharipov L. Sh. Reinforced concrete structures. Part 1, Dushanbe, 2011</p> <p>Sharipov L. Sh. Reinforced concrete structures. Part 2, Dushanbe, 2011.</p> <p>Sharipov L. Sh. Reinforced concrete structures. Part 3, Dushanbe, 2013</p>
9	Metal structures and welding	<p>Construction documentation system. Rules of execution of design and working documentation of metal constructions. GOST 21.502-2007</p> <p>Maslov V. I. Welding works, M.: 2002.</p> <p>Kudishin Y.I. and others. Metal constructions, M.: 2010.</p> <p>Dorkin V.V., Ryabtseva M.P. Metal constructions, M.: 2012.</p> <p>Malbiev S.A., Teloyan A.L. and others. Structural constructions: metal constructions, reinforced concrete and stone constructions, constructions from wood and plastics, M.: 2008.</p> <p>Moskalev N.S. and others. Metal constructions, including welding, M.: 2014.</p> <p>Semenov A.A. Metal constructions., Calculation of elements and connections using the software complex SCAD OFFICE, M.: 2014.</p> <p>Banov M.D., Kazakov Yu.V. and others. Welding and cutting of materials, M.: 2010.</p>
10	Construction Materials	<p>Barabanshchikov Y.G. Construction materials and publications, M.: 2010.</p> <p>Airapetov G.A. and others. Construction materials, Rostov-on-Don, 2009</p>

No.	Names of disciplines	Teaching materials
		<p>Belov V.V., Petropavlovskaya V.B. Construction materials, M.: 2014.</p> <p>Krasovsky P.S. Construction materials, Moscow, 2016.</p> <p>Seferov G.G. and others. Material Science, M.: 2011.</p> <p>Seferov G.G., Batiykov V.T. and others. Material Science, M.: 2011.</p> <p>Khramtsov N.V. Construction material science. Laboratory workshop, M.: 2011.</p> <p>Bayer V.E. Architectural Materials Science, Moscow, 2012.</p> <p>Cherepakhin A.A. Material Science, Moscow, 2004.</p> <p>Batyshva A.I., Smolkina A.A. (ed.) Materials Science and Technology of Materials, Moscow, 2016.</p> <p>Drozd M.I. Material Science, Moscow, 2017.</p>
11	National Building Constructions	<p>Mayilyan R.L., Mayilyan D.R., Veselev Yu. A. Building structures, Rostov-on-Don, 2010</p> <p>Setkov V.I., Serbin E.P. Structural constructions. Calculation and design, M.: 2012.</p> <p>Serbin E.P., Setkov V.I. Building structures, M.: 2010.</p> <p>Malbiev S.A., Teloyan A.L. and others. Structural constructions: metal constructions, reinforced concrete and stone constructions, constructions from wood and plastics, M.: 2010.</p> <p>Kudishin Yu.I. Metal constructions, M.: 2010.</p> <p>Dorkin V.V., Ryabtseva M.P. Metal constructions, M.: 2012.</p> <p>Malbiev S.A., Teloyan A.L. and others. Structural constructions: metal constructions, reinforced concrete and stone constructions, constructions from wood and plastics, M.: 2008.</p> <p>Semenov A.A. Metal constructions., Calculation of elements and connections using the software complex SCAD OFFICE, M.: 2014.</p> <p>Bobrov Y.L., Ovcharenko E.G., Shoikhet B.M., Petukhova E.Yu. Thermal insulation materials and constructions, M.: 2010.</p> <p>Devyataeva G.V. Technology of reconstruction and modernization of buildings, M.: 2011.</p> <p>Bobrov Yu.L., Ovcharenko E.G. and others. Thermal insulation materials and constructions, M.: 2010.</p> <p>Badin G.M., Tanicheva N.V. Strengthening of building structures during the reconstruction and overhaul of the building, Moscow, 2011.</p> <p>Devyatayeva G.V. Technology of reconstruction and modernization of buildings, Moscow, 2011.</p> <p>Giyasov A. Architectural structures of low-rise civil buildings, Dushanbe, 2009.</p>

No.	Names of disciplines	Teaching materials
		<p>Badin G.M., Tanicheva N.V. Strengthening of building structures during the reconstruction and overhaul of the building, M.: 2013.</p> <p>Zaikin A.I. Reinforced concrete structures of one-story industrial buildings, Moscow: 2007.</p> <p>Maklakova T.G., Nanasova S.M. Constructions of civil buildings, Moscow, 2012.</p> <p>Blagoveshchensky F.A., Bukina E.F. Architectural structures, M .: 2014.</p> <p>Sysoeva E.V. Architectural structures of low-rise buildings, Moscow, 2012.</p> <p>Kuznetsov V.S. Reinforced concrete and stone structures, Moscow, 2014.</p> <p>Munchak L.A. Low-rise residential building structures. (Course design), Moscow, 2012.</p> <p>Kuznetsov V.S. Reinforced concrete structures of multi-storey buildings. Course and diploma design, M .: 2013.</p> <p>Oripov D. Building constructions -2. Collection of problems, Khujand, 2017.</p> <p>Oripov D. Building constructions-2. Lecture course, Khujand, 2017.</p> <p>Dadoboev A.I. Construction design. Lectures, Khujand: 2018.</p> <p>Expenditure element norms for construction works. Collection № 9. Metal construction structures, Dushanbe, 2008.</p>
12	Structural Dynamics	<p>Smirnov A.F. Construction mechanics. Dynamics and stability of structures, Moscow, 1984.</p> <p>Bezukhov N.I. et al. Stability and dynamics of structures in examples and tasks, Moscow, 1987.</p> <p>Lobov N.A. Dynamics of lifting cranes, Moscow, 1987.</p> <p>Bezukhov N.I. et al. Stability and dynamics of structures in examples and tasks, Moscow, 1987.</p> <p>Goshi B. Statics and dynamics of knowledge. M .: 1984.</p> <p>Smirnov A.F. et al. Construction mechanics. Dynamics and stability of structures, Moscow, 1984.</p> <p>Nizomov J. Construction mechanics. Dynamics of objects, Dushanbe, 1991.</p>
13	Structural stability and thin-walled spatial structures	<p>Aleksandrov A.V. etc. Construction mechanics. Thin-walled spatial systems, M.: 2016</p> <p>Kosenko I.S. Hanging roof structures, Moscow, 1966.</p> <p>Otto Frey Hanging coverings of their form and design, Moscow, 1960.</p>
14	Constructive and heat-insulating	<p>Bobrov Yu.L., Ovcharenko E.G., Shoikhet B.M., Petukhova E.Yu. Thermal insulation materials and structures, M.: 2010.</p>

No.	Names of disciplines	Teaching materials
	materials in construction	Bobrov Yu.L., Ovcharenko E.G. and other Thermal insulation materials and structures, M.: 2010.
15	Architectural and building structures	<p>Giyasov A. Architectural structures of low-rise civil buildings, Dushanbe: 2009.</p> <p>Usmonov, Sh. Z. Architecture of civil and industrial buildings: educational-methodical manual / Sh. Z. Usmonov; KPITTU – Khujand, 2018. - 60p.</p> <p>F.A. Blagoveshchenskiy, E.F. Bukina Architectural structures, M.: 2014.</p> <p>Sysoeva E.V. Architectural structures of low-rise buildings, Moscow, 2012.</p> <p>Zaitsev Yu.V., Promyslov V.F. Building structures, Moscow, 1985.</p> <p>Tsai T.N., Borodich M.K., Mandrikov A.P. Building constructions, Moscow, 1984.</p>
16	Reconstruction of buildings and structures	<p>Fedorov V.V. Reconstruction and restoration of buildings, Moscow, 2011.</p> <p>Fedorov V.V., Fedorova N.N., Sukharev Yu.V. Reconstruction of buildings, structures and urban development, Moscow, 2011.</p>
17	Survey of buildings and structures	Kalinin V.M., Sokova S.D., Topilin A.N. Inspection and testing of structures of buildings and structures, Moscow, 2012.
18	Architecture	<p>Vilchik N.P. Architecture of buildings, Moscow: 2012.</p> <p>Usmonov Sh. Z. Architecture of civil and industrial buildings: educational-methodical manual / Sh. Z. Usmonov; KPITTU – Khujand, 2018. - 60p.</p> <p>Teodoronsky V.S., Bogovaya I.O. Landscape architecture, Moscow, 2010.</p> <p>Roslyakov A.V. OKS No. 7: architecture, protocols, application, Moscow, 2008.</p> <p>Maklakova T.G., Nanasova S.M. and others. Architecture, M.: 2009.</p> <p>Giyosov A. Architectural and constructive design of civil buildings, Dushanbe, 2014</p> <p>Khakimov Kh.Kh. History of architecture. Volume 2, Khujand, 2018</p> <p>Khakimov Kh.Kh. History of architecture. Volume 3, Khujand, 2018</p> <p>Ikromova A.M, Muhammad-Rizoeva ND Curriculum - a method of English (professional) language for students of the Faculty of Construction and Architecture, Khujand, 2015.</p> <p>Zokirov R.Sh. Architect design (level 1-3). Methodical instructions for independent work, Khujand, 2017.</p> <p>Zokirov R.Sh. History of architecture. Methodical instructions, Khujand, 2019.</p>

No.	Names of disciplines	Teaching materials
		Gnedich P.P. History of art. Painting. Sculpture. Architecture, M.: 2009.
19	Architecture of low buildings	<p>Giyasov A. Architectural structures of low-rise civil buildings, Dushanbe, 2009.</p> <p>Nanasova S.M., Rylko M.A., Nanasov I.M. Design of low-rise buildings, M.: 2014.</p> <p>Sysoeva E.V. Architectural structures of low-rise buildings, Moscow, 2012.</p> <p>Munchak L.A. Low-rise residential building structures. (Course design), Moscow, 2012.</p>
20	Basics of architectural design	Davydova O.V. Landscape design: textbook / Davydova OV-Chelyabinsk: SUSU, LLC "REKPOL Publishing House", 2008.-80 p.
21	Architectural design of multifunctional buildings	Methodological guide for the design of architectural and planning solutions for multifunctional buildings and complexes, Moscow, 2019.
22	Theory of Architecture and Urban Planning	<p>Gusev N.M., Makarevich V.G. Light architecture, Moscow, 1973.</p> <p>Veselovsky V.G. et al. Architecture of Soviet Tajikistan, Moscow, 1986.</p> <p>Vilchik N.P. Architecture of buildings, Moscow, 2012.</p> <p>Teodoronsky V.S., Bogovaya I.O. Landscape architecture, Moscow, 2010.</p> <p>Roslyakov A.V. OKS No. 7: architecture, protocols, application, Moscow, 2008.</p> <p>Maklakova T.G., Nanasova S.M. and others. Architecture, M.: 2009.</p> <p>Giyosov A. Architectural and constructive design of civil buildings, Dushanbe, 2014</p> <p>Khakimov Kh.Kh. History of Architecture. Volume 2, Khujand, 2005</p> <p>Khakimov Kh.Kh. History of Architecture. Volume 3, Khujand, 2008</p> <p>Zokirov R.Sh. History of Architecture. Methodical manual, Khujand, 2019</p> <p>Krasnoshchekova N.S. Formation of the natural framework in the master plans of cities, Moscow, 2010</p> <p>Zokirov R.Sh. Fundamentals of urban planning, Khujand, 2018</p>
23	Engineering cartography	<p>Sysoev K.A. Fundamentals of Geodesy and Cartography, M.: 1976.</p> <p>Larchenko M.P., Milovatskaya T.N. and others. Tests and tasks for the course of engineering geodesy, Moscow, 2013.</p> <p>Khakimov N.K., Khakimov M.N. Geodesy, Dushanbe, 2016.</p>
24		Razumova O.S. (ed.) Engineering geodesy in construction, Moscow, 1984.

No.	Names of disciplines	Teaching materials
	Fundamentals of Surveying and Terrain Planning	<p>Sytnin V.S. Construction geodesy, Moscow, 1974.</p> <p>Pavlov F.F., Mashkevich V.P., Fedorov B.D. Geodesy, Moscow, 1961.</p> <p>Lukhyanov V.F. Calculations of the accuracy of engineering and geodetic works, M.: 1990.</p> <p>Viduev N.G., Baran P.I. et al. Geodetic alignment works, Moscow: 1973.</p> <p>Shilov P.I. Geodesy, Moscow, 1963.</p> <p>Livanov M.M. Geodesy in construction, Moscow, 1973.</p> <p>Livanov M.M. Geodesy in construction, Moscow, 1968.</p> <p>Kolpaev A.P. and other, Geodesy, part 2, Moscow, 1958.</p> <p>Bruevich P.N., Samoshkin E.M. Geodesy, M.: 1985.</p> <p>Larchenko M.P., Milovatskaya T.N. and others. Tests and tasks for the course of engineering geodesy, Moscow, 2013.</p> <p>Khakimov N.K., Khakimov M.N. Geodesy, Dushanbe, 2016</p>
25	Engineering Geodesy	<p>Razumova O.S. (ed.) Engineering geodesy in construction, Moscow, 1984.</p> <p>Sytnin V.S. Construction geodesy, Moscow, 1974.</p> <p>Pavlov F.F., Mashkevich V.P., Fedorov B.D. Geodesy, Moscow, 1961.</p> <p>Lukhyanov V.F. Calculations of the accuracy of engineering and geodetic works, M.: 1990.</p> <p>Viduev N.G., Baran P.I. et al. Geodetic alignment works, Moscow, 1973.</p> <p>Shilov P.I. Geodesy, Moscow, 1963.</p> <p>Livanov M.M. Geodesy in construction, Moscow, 1973.</p> <p>Livanov M.M. Geodesy in construction, Moscow, 1968.</p> <p>Kolpaev A.P. and other Geodesy, part 2, Moscow, 1958.</p> <p>Bruevich P.N., Samoshkin E.M. Geodesy, M.: 1985.</p> <p>Larchenko M.P., Milovatskaya T.N. and others. Tests and tasks for the course of engineering geodesy, Moscow, 2013.</p> <p>Khakimov N.K., Khakimov M.N. Geodesy, Dushanbe, 2016</p>

### 3. Review of available teaching material and teaching methods of TTU

**Table 6.** LIST OF LABORATORIES AT THE DEPARTMENT OF ARCHITECTURE OF TTU

No.	Name	Short description
1.	Art	Conducting practical classes in painting and drawing
2.	Sculpting	Modeling, restoration of sculptures and creation of models of monuments and busts
3	Ecology	Measurement studies of the environment
4	Experimental design laboratory	Creation of composite models of buildings and structures
5	Center of Innovative technologies	Teaching innovative design methods through online lessons

**Table 7.** UTILIZATION OF LABORATORIES BY DISCIPLINE

Disciplines	Name of laboratories			Remarks
	Art	Sculpting	Ecology	
Architectural Physics (climatology, acoustics, light engineering)				
Architectural and construction designs				
Fundamentals of Geodesy and Local Design	+			use laboratories of another department
Descriptive geometry and design	+			use laboratories of another department
Painting-1		+		
Designer		+		
Fundamentals of Architectural Design				
Fundamentals of Architecture				
Architectural Design				
Rural Environment Architecture	+			
Restoration of Architectural Monuments (Restoration)	+			
Interior and office equipment	+			
Architectural Designer				
Designing of urban development taking into account the historical and architectural heritage				
Renovation of buildings and structures				

**Table 8.** LIST OF BASIC TEACHING METHODS USED IN TTU (THE SAME AS IN KPITTU)

No.	Name	Short description
1.	Lecture	This is one of the most common ways to convey information to the target listener. Oral presentation has long been used for the simultaneous training of a large number of people. A correctly structured lecture activates mental activity, provides an emotional connection between the listener and the speaker, and contributes to a better perception of the material. This learning style is effective in teaching the humanities and natural sciences as well as the exact disciplines.
2.	Explanation	This is a cognitive procedure aimed at enriching and deepening knowledge about the phenomena of the real world by including these phenomena in the structure of certain connections, relations and dependencies, which makes it possible to reveal the essential features of this phenomenon. In the simplest case, the subject of explanation is individual empirically recorded facts.
3.	Study discussion	This is the most developed organizational form of educational dialogue, which allows the teacher and students to come to mutually agreed solutions to complex educational problems, bringing together and clarifying different positions and points of view on the problems under discussion, achieving mutual understanding and recognition of the right of each to his own special position and a different point of view.
4.	Working with literature	This type of sources reflects the latest state of the art and therefore deserves attention. (note-taking, drafting a text plan, testifying, reviewing, drawing up diagrams)
5.	Visual methods	Visual teaching methods are understood as such methods in which the assimilation of educational material is significantly dependent on the visual aids and technical means used in the learning process. (illustration, demonstration, educational laboratory experiment).
6.	Exercises	This is a teaching method that provides for targeted, repeated repetition of certain actions or operations by students in order to form skills and abilities. (oral exercises, written exercises, graphic exercises, laboratory practice exercises).
7.	Laboratory work	This is a teaching method in which students, under the guidance of a teacher and according to a predetermined plan, do experiments or perform certain practical tasks.
8.	Practical work	This is a form of organization of the educational process, involving the performance by students on assignment and under the guidance of a teacher, one or more practical work. The didactic goal of practical work is to form students' professional skills, as well as practical skills necessary for studying subsequent academic disciplines.
9.	Independent work	This is a form of training in which the student learns the necessary knowledge, master's skills and abilities, learns to work systematically, systematically, think, and forms his own style of mental activity. It differs from other forms of education in that it presupposes the student's ability to organize his own activities in accordance with the assigned or arisen task.



No.	Name	Short description
10.	Seminar	This is one of the most effective methods of teaching. Seminars are usually preceded by lectures that define the topic, nature and content of the seminar.
11.	Creative works	This is the result of human creative efforts. This concept includes fine arts, literature, painting, music, choreography, etc. Creative work implies the creation of something new and unique (it is unlikely that two people will create the same work). The term is mentioned in the laws of different states and is widespread. Also often used in the context of copyright.

**Table 9. USE OF TEACHING METHODS BY DISCIPLINE**

Disciplines	No. Teaching Methods										
	1	2	3	4	5	6	7	8	9	10	11
<b>Architectural Physics (climatology, acoustics, light engineering)</b>	+	+	+	+		+		+	+		
<b>Architectural and construction designs</b>	+	+	+	+		+		+	+	+	+
<b>Fundamentals of Geodesy and Local Design</b>	+	+	+	+		+	+	+	+		
<b>Descriptive geometry and design</b>	+	+	+	+		+	+	+	+		
<b>Painting-1</b>	+	+	+	+	+	+	+	+	+		
<b>Designer</b>	+	+	+	+	+	+	+	+	+		
<b>Fundamentals of Architectural Design</b>	+	+	+	+		+		+	+	+	+
<b>Fundamentals of Architecture</b>	+	+	+	+		+		+	+		
<b>Architectural Design</b>	+	+	+	+	+	+		+	+	+	+
<b>Rural Environment Architecture</b>	+	+	+	+	+	+	+	+	+		
<b>Restoration of Architectural Monuments (Restoration)</b>	+	+	+	+	+	+	+	+	+	+	+
<b>Interior and office equipment</b>	+	+	+	+	+	+	+	+	+		
<b>Architectural Designer</b>	+	+	+	+	+	+		+	+	+	+
<b>Designing of urban development taking into account the historical and architectural heritage</b>	+	+	+	+		+		+	+	+	+
<b>Renovation of buildings and structures</b>	+	+	+	+	+	+		+	+	+	+

List of basic teaching materials.

1. Methods of restoration of architectural monuments. Mukimova S. Dushanbe - 2015.
2. Restoration of architectural monuments. Mukimov R., Mamadzhanova S., Dushanbe - 2007.
3. History of national architecture. Mukimov R., Mamadzhanova S., Dushanbe - 2006.  
Tajikistan - Mukimova S., Dushanbe -2012
5. Protection and preservation of monuments of architecture and urban planning of the Republic of Tajikistan - Mukimova S. Dushanbe -2015
6. Continuity and innovation of traditions in architecture and art of Tajikistan (1924-2015). Mukimov R.S., Dzhurakhonov S. – Dushanbe - 2018.
7. Folk crafts of Tajikistan (industrial, engineering and utilitarian buildings and structures of the 19th-20th centuries). Mukimova S.R., Mamadzhanova S.M., Mukimov R.S. Dushanbe- 2018
8. Monuments of the cultural heritage of Gorno-Badakhshan. Mukimov R.S., Mukimova S.R. Dushanbe - 2018.
9. Monuments of cultural heritage of Khatlon. Mukimov R.S., Mukimova S.R. Dushanbe 2018.



10. Landscape architecture. Lecture notes for the study of the discipline "Landscape architecture" for undergraduates of direction 6901-01 - "Architecture". Compiled by R.S Mukimov, S.M., Mamadzhanova, S.R. Mukimova. Dushanbe -2018:
11. Fundamentals of architectural color. Textbook for the study of the discipline "Fundamentals of architectural colorism" in the direction 6901-01 - "Architecture". / The authors-compilers R.S. Mukimov, S.M. Mamadzhanova, S.R. Mukimova . Dushanbe 2019
12. Art and visual perception. Stereotyped edition. Arnheim R.
13. Architectural structures. Textbook. Blagoveshchensky F.A., Bukina E.F.
14. Chapels in the architectural and planning environment of the city. Blagovidova N.G.
15. Font in the work of an architect. Bezukhova L.N., Yumagulova L.A.
16. Evolution of industrial architecture. Vershinin V.I.
17. Rule of five orders of architecture. Vignola J.
18. Architectural design of public buildings and structures. Gelfond A.L.
20. Operation and repair of equipment for construction industry enterprises. Gologorsky E.G., Dotsenko A.I., Ilyin A.S.
21. Architectural physics, Textbook for open source software, Tolsteneva A.A., Kutepova L.I., Abramov A.A., 2019.
22. Architectural physics: Textbook for universities: spec. "Architecture" / V.K. Litskevich, L.I. Makrinenko, I. V. Migalina and others; edited by N.V. Obolensky - Moscow, 1997
23. Architectural and construction acoustics. S. D. Kovrigin, S.I. Kryshov, Moscow -1986.
- 24 Foundations of building physics. S. D. Gusev. Moscow - 1975
- 25 A dwelling for a person. Yu.D. Gubernsky, V.K. Litskevich. Moscow -1991
26. Architectural design of public buildings and structures. Under the general editorship of prof. I.E. Rogozhin: textbook for universities. Moscow-1985
27. Engineering geodesy: textbook for universities. E.B.Klyushin [and others]; ed. D. Sh. Mikhelev. Moscow- 2010.
28. Applied geodesy in industrial and civil construction. V.F.Lukyanov, 2011.
29. Geodetic instrumentation: textbook. for universities: Kh.K. Yambaev, 2011
30. Applied Geodesy [Electronic resource]: textbook method. manual / V.S. Khoroshilov, Zh.A. Khoroshilova; Novosibirsk-2010.
31. Geodetic control of engineering objects of industrial enterprises and civil complexes [Electronic resource]: textbook. allowance / B.N. Zhukov, A.P. Carpik; Novosibirsk - 2006.
32. Technologies of geodetic and cartographic works [Electronic resource]: study guide / Afonin K.F. - Novosibirsk -2007
33. Painting. G.V. Beda. Moscow- 1986.
34. Color in painting. A.A. Unkovsky. Moscow-1983.
35. Painting. Color issues. A.A. Unkovsky. Moscow-1980.
36. Painting and its visual means. The trouble of G.V. Moscow-1977
37. Painting M. : A.P. Yashukhin. Moscow-1985
38. Basics of descriptive geometry: for students of higher educational institutions in technical specialties: textbook /A.F. Kokoshko. Minsk - 2009.
39. Descriptive geometry: lecture texts / B.I. Tarenko, V.N. Shekurov, M.E. Kiryagina. Kazan - 2014
40. Descriptive geometry: a textbook for students of art specialties / M.N. Makarov. - M. 2012
41. Architectural design of public buildings and structures: A.L. Gelfond. Moscow -2007
42. Architectural design: functional and artistic foundations of design / V. N. Tkachev. Moscow - 2006
43. Architectural design of residential buildings: textbook. manual for stud. universities / M. V. Lisitsian, V. L. Pashkovsky, Z. V. Petunina [and others] - Moscow-2006

**Table 10. USE OF TEACHING MATERIALS BY DISCIPLINE**

No.	Names of disciplines	Literature
1	Architectural Physics (climatology, acoustics, light engineering)	<ol style="list-style-type: none"> <li>1. Architectural physics, Textbook for open source software, Tolsteneva A.A., Kutepova L.I., Abramov A.A., 2019.</li> <li>2. Architectural physics: Textbook for universities: spec. "Architecture" / V.K. Litskevich, L.I. Makrinenko, I. V. Migalina and others; edited by N.V. Obolensky - Moscow, 1997</li> <li>3. Architectural and construction acoustics. S. D. Kovrigin, S.I. Kryshov, Moscow -1986.</li> <li>4. Foundations of building physics. S. D. Gusev. Moscow - 1975</li> </ol>
2	Architectural and construction designs	<ol style="list-style-type: none"> <li>1. A dwelling for a person. Yu.D. Gubernsky, V.K. Litskevich. Moscow -1991</li> <li>2. Architectural design of public buildings and structures. Under the general editorship of prof. I.E. Rogozhin: textbook for universities. Moscow-1985</li> <li>3. Architectural structures. Textbook. Blagoveshchensky F.A., Bukina E.F.</li> </ol>
3	Fundamentals of Geodesy and Local Design	<ol style="list-style-type: none"> <li>1. Engineering geodesy: textbook for universities. E.B.Klyushin [and others]; ed. D. Sh. Mikhelev. Moscow- 2010.</li> <li>2. Applied geodesy in industrial and civil construction. V.F.Lukyanov, 2011.</li> <li>3. Geodetic instrumentation: textbook. for universities: Kh.K. Yambaev, 2011</li> <li>4. Applied Geodesy [Electronic resource]: textbook method. manual / V.S. Khoroshilov, Zh.A. Khoroshilova; Novosibirsk-2010.</li> <li>5. Geodetic control of engineering objects of industrial enterprises and civil complexes [Electronic resource]: textbook. allowance / B.N. Zhukov, A.P. Carpik; Novosibirsk - 2006.</li> <li>6. Technologies of geodetic and cartographic works [Electronic resource]: study guide / Afonin K.F. - Novosibirsk -2007</li> </ol>
4	Descriptive geometry and design	<ol style="list-style-type: none"> <li>1. Basics of descriptive geometry: for students of higher educational institutions in technical specialties: textbook /A.F. Kokoshko. Minsk - 2009.</li> <li>2. Descriptive geometry: lecture texts / B.I. Tarenko, V.N. Shekurov, M.E. Kiryagina. Kazan - 2014</li> <li>3. Descriptive geometry: a textbook for students of art specialties / M.N. Makarov. - M. 2012</li> </ol>
5	Painting-1	<ol style="list-style-type: none"> <li>1. Painting. G.V. Beda. Moscow- 1986.</li> <li>2. Color in painting. A.A. Unkovsky. Moscow-1983.</li> <li>3. Painting. Color issues. A.A. Unkovsky. Moscow-1980.</li> <li>4. Painting and its visual means. The trouble of G.V. Moscow-1977</li> <li>5. Painting M. : A.P. Yashukhin. Moscow-1985</li> </ol>

No.	Names of disciplines	Literature
6	Designer	<ol style="list-style-type: none"> <li>1. Architectural design of public buildings and structures:</li> <li>2. A.L. Gelfond. Moscow -2007</li> <li>3. Architectural design: functional and artistic foundations of design / V. N. Tkachev. Moscow - 2006</li> <li>4. Architectural design of residential buildings: textbook. manual for stud. universities / M. V. Lisitsian, V. L. Pashkovsky, Z. V. Petunina [and others] - Moscow-2006</li> </ol>
7	Fundamentals of Architectural Design	<ol style="list-style-type: none"> <li>1. Architectural structures. Textbook. Blagoveshchensky F.A., Bukina E.F.</li> <li>2. Chapels in the architectural and planning environment of the city. Blagovidova N.G.</li> <li>3. Font in the work of an architect. Bezukhova L.N., Yumagulova L.A.</li> <li>4. Evolution of industrial architecture. Vershinin V.I.</li> <li>5. Rule of five orders of architecture. Vignola J.</li> <li>6. Architectural design of public buildings and structures. Gelfond A.L.</li> </ol>
8	Fundamentals of Architecture	<ol style="list-style-type: none"> <li>1. Architectural structures. Textbook. Blagoveshchensky F.A., Bukina E.F.</li> <li>2. Chapels in the architectural and planning environment of the city. Blagovidova N.G.</li> <li>3. Font in the work of an architect. Bezukhova L.N., Yumagulova L.A.</li> <li>4. Evolution of industrial architecture. Vershinin V.I.</li> <li>5. Rule of five orders of architecture. Vignola J.</li> </ol> <p>Architectural design of public buildings and structures. Gelfond A.L.</p>
9	Architectural Design	<ol style="list-style-type: none"> <li>1. Fundamentals of architectural color. Textbook for the study of the discipline "Fundamentals of architectural colorism" in the direction 6901-01 - "Architecture". / The authors-compilers R.S. Mukimov, S.M. Mamadzhanova, S.R. Mukimova . Dushanbe 2019</li> <li>2. Art and visual perception. Stereotyped edition. Arnheim R.</li> <li>3. Architectural structures. Textbook. Blagoveshchensky F.A., Bukina E.F.</li> <li>4. Folk crafts of Tajikistan (industrial, engineering and utilitarian buildings and structures of the 19th-20th centuries). Mukimova S.R., Mamadzhanova S.M., Mukimov R.S. Dushanbe- 2018</li> </ol>
10	Rural Environment Architecture	<ol style="list-style-type: none"> <li>1. Chapels in the architectural and planning environment of the city. Blagovidova N.G.</li> <li>2. Landscape architecture. Lecture notes for the study of the discipline "Landscape architecture" for undergraduates of direction 6901-01 - "Architecture". Compiled by R.S Mukimov, S.M., Mamadzhanova, S.R. Mukimova. Dushanbe -2018:</li> </ol>

No.	Names of disciplines	Literature
11	Restoration of Architectural Monuments (Restoration)	<ol style="list-style-type: none"> <li>1. Methods of restoration of architectural monuments. Mukimova S. Dushanbe - 2015.</li> <li>2. Restoration of architectural monuments. Mukimov R., Mamadzhanova S., Dushanbe - 2007.</li> <li>3. History of national architecture. Mukimov R., Mamadzhanova S., Dushanbe - 2006.</li> <li>4. Tajikistan - Mukimova S., Dushanbe -2012</li> <li>5. Protection and preservation of monuments of architecture and urban planning of the Republic of Tajikistan - Mukimova S. Dushanbe -2015</li> <li>6. Monuments of the cultural heritage of Gorno-Badakhshan. Mukimov R.S., Mukimova S.R. Dushanbe - 2018.</li> <li>7. Monuments of cultural heritage of Khatlon. Mukimov R.S., Mukimova S.R. Dushanbe 2018</li> </ol>
12	Interior and office equipment	<ol style="list-style-type: none"> <li>1. Architectural design of public buildings and structures: A.L. Gelfond. Moscow -2007</li> <li>2. Architectural design: functional and artistic foundations of design / V. N. Tkachev. Moscow - 2006</li> <li>3. Architectural design of residential buildings: textbook. manual for stud. universities / M. V. Lisitsian, V. L. Pashkovsky, Z. V. Petunina [and others] - Moscow-2006</li> </ol>
13	Architectural Designer	<ol style="list-style-type: none"> <li>1. Fundamentals of architectural color. Textbook for the study of the discipline "Fundamentals of architectural colorism" in the direction 6901-01 - "Architecture". / The authors-compilers R.S. Mukimov, S.M. Mamadzhanova, S.R. Mukimova . Dushanbe 2019</li> <li>2. Art and visual perception. Stereotyped edition. Arnheim R.</li> <li>3. Architectural structures. Textbook. Blagoveshchensky F.A., Bukina E.F.</li> <li>4. Folk crafts of Tajikistan (industrial, engineering and utilitarian buildings and structures of the 19th-20th centuries). Mukimova S.R., Mamadzhanova S.M., Mukimov R.S. Dushanbe- 2018</li> </ol>
14	Designing of urban development taking into account the historical and architectural heritage	<ol style="list-style-type: none"> <li>1. Methods of restoration of architectural monuments. Mukimova S. Dushanbe - 2015.</li> <li>2. Restoration of architectural monuments. Mukimov R., Mamadzhanova S., Dushanbe - 2007.</li> <li>3. History of national architecture. Mukimov R., Mamadzhanova S., Dushanbe - 2006.</li> <li>4. Tajikistan - Mukimova S., Dushanbe -2012</li> <li>5. Protection and preservation of monuments of architecture and urban planning of the Republic of Tajikistan - Mukimova S. Dushanbe -2015</li> </ol>

No.	Names of disciplines	Literature
		<p>6. Monuments of the cultural heritage of Gorno-Badakhshan. Mukimov R.S., Mukimova S.R. Dushanbe - 2018.</p> <p>7. Monuments of cultural heritage of Khatlon. Mukimov R.S., Mukimova S.R. Dushanbe 2018</p>
15	Renovation of buildings and structures	<p>1. Methods of restoration of architectural monuments. Mukimova S. Dushanbe - 2015.</p> <p>2. Restoration of architectural monuments. Mukimov R., Mamadzhanova S., Dushanbe - 2007.</p> <p>3. History of national architecture. Mukimov R., Mamadzhanova S., Dushanbe - 2006.</p> <p>4. Tajikistan - Mukimova S., Dushanbe -2012</p> <p>5. Protection and preservation of monuments of architecture and urban planning of the Republic of Tajikistan - Mukimova S. Dushanbe -2015</p> <p>6. Monuments of the cultural heritage of Gorno-Badakhshan. Mukimov R.S., Mukimova S.R. Dushanbe - 2018.</p> <p>7. Monuments of cultural heritage of Khatlon. Mukimov R.S., Mukimova S.R. Dushanbe 2018</p>

## 4. Review of available teaching material and teaching methods of TTPU

**Table 11.** LIST OF LABORATORY OF CIVIL ENGINEERING AND ARCHITECTURE DEPARTMENT OF TTPU

No.	Name	Short description
1.	Laboratory of civil engineering and architecture	<p>The Department of Civil Engineering and Architecture at Turin Polytechnic University in Tashkent has well-equipped laboratories. In 2020 laboratory enriched its capacity with new modern testing instruments from Italy. With these instruments the physical and mechanical properties of construction materials can be accurately evaluated. Students can carry out various experiments such as:</p> <ul style="list-style-type: none"> <li>• Assessment of structural building models and components in seismic environments with an earthquake simulator</li> <li>• Assessment of compressive strength of various types of concretes</li> <li>• Testing the tensile strength of concrete and rebars</li> <li>• Testing of soil samples, including moisture content, specific gravity, sieve &amp; hydrometer analysis</li> </ul>

No.	Name	Short description
		<ul style="list-style-type: none"> <li>•Determination of shear strength of soil and moisture content by using digital liquid limit penetrometer instrument</li> <li>•Measurements of the deflection of bridges, ceilings or any suspended structures</li> <li>•Determination of calcium carbonate (CaCO<sub>3</sub>) especially in various rocks particularly limestone and lime marl by using Gasometer Dietrich-FrÜling</li> </ul> <p>Moreover, laboratory has a modern land surveying instruments, namely total stations Leica TS06, GeoMax Zipp10 Pro/Zoom40 series, Leica Sprinter 50 Digital Auto Level, GARMIN 64s GPS and it's all other components.</p> <p>These instruments give students hands-on experience and strengthen obtained theoretical knowledge by practice in real field.</p> <p>Students can carry out various experiments regarding:</p> <ul style="list-style-type: none"> <li>•Collecting control points from natural earth data and building structures, and calculating its coordinates with intersection and resection methods</li> <li>•Setting out control points in AutoCAD or GIS environment and producing up-to-date maps and plans</li> <li>•Conducting the trigonometric, profile, differential, reciprocal and inverted staff leveling measurements</li> </ul> <p>In the computer laboratory, students can perform rigorous least squares adjustments of set of control points by using MicroSurvey STAR*NET software.</p> <p>Laboratory is also designed to conduct photogrammetric surveying.</p>

**Table 12.** LIST OF BASIC TEACHING METHODS USED IN TTPU

No.	Name	Short description
1.	Lecture	This is one of the most common ways to convey information to the target listener. Oral presentation has long been used for the simultaneous training of a large number of people. A correctly structured lecture activates mental activity, provides an emotional connection between the listener and the speaker, and contributes to a better perception of the material. This learning style is effective in teaching the humanities and natural sciences as well as the exact disciplines.
2.	Explanation	This is a cognitive procedure aimed at enriching and deepening knowledge about the phenomena of the real world by including these phenomena in the structure of certain connections, relations and dependencies, which makes it possible to reveal the essential features of this phenomenon. In the simplest case, the subject of explanation is individual empirically recorded facts.
3.	Study discussion	This is the most developed organizational form of educational dialogue, which allows the teacher and students to come to mutually agreed solutions to complex educational problems,

No.	Name	Short description
		bringing together and clarifying different positions and points of view on the problems under discussion, achieving mutual understanding and recognition of the right of each to his own special position and a different point of view.
4.	Working with literature	This type of sources reflects the latest state of the art and therefore deserves attention. (note-taking, drafting a text plan, testifying, reviewing, drawing up diagrams)
5.	Visual methods	Visual teaching methods are understood as such methods in which the assimilation of educational material is significantly dependent on the visual aids and technical means used in the learning process. (illustration, demonstration, educational laboratory experiment).
6.	Exercises	This is a teaching method that provides for targeted, repeated repetition of certain actions or operations by students in order to form skills and abilities. (oral exercises, written exercises, graphic exercises, laboratory practice exercises).
7.	Laboratory work	This is a teaching method in which students, under the guidance of a teacher and according to a predetermined plan, do experiments or perform certain practical tasks.
8.	Practical work	This is a form of organization of the educational process, involving the performance by students on assignment and under the guidance of a teacher, one or more practical work. The didactic goal of practical work is to form students' professional skills, as well as practical skills necessary for studying subsequent academic disciplines.
9.	Independent work	This is a form of training in which the student learns the necessary knowledge, master's skills and abilities, learns to work systematically, systematically, think, and forms his own style of mental activity. It differs from other forms of education in that it presupposes the student's ability to organize his own activities in accordance with the assigned or arisen task.
10.	Seminar	This is one of the most effective methods of teaching. Seminars are usually preceded by lectures that define the topic, nature and content of the seminar.
11.	Creative works	This is the result of human creative efforts. This concept includes fine arts, literature, painting, music, choreography, etc. Creative work implies the creation of something new and unique (it is unlikely that two people will create the same work). The term is mentioned in the laws of different states and is widespread. Also often used in the context of copyright.

**Table 13. USE OF TEACHING METHODS BY DISCIPLINE IN TTPU**

Disciplines	No. Teaching Methods										
	1	2	3	4	5	6	7	8	9	10	11
<b>Geology / Safety and civil protection</b>	+	+	+	+	+	+		+	+		
<b>Land surveying</b>	+	+	+	+	+	+		+	+		
<b>Geotechnics</b>	+	+	+	+	+	+		+	+		
<b>Structural Engineering</b>	+	+	+	+	+	+	+	+	+		

List of basic teaching materials.

1. Ben Mearns, Ben Mearns, Alex Mandel, QGIS: Becoming a GIS Power User, Published by Packt Publishing Ltd., 2017
2. Kang-tsung Chang, Introduction to Geographic Information System (GIS), McGraw-Hill, 2008
3. Aurele Parriaux, Geology Basics for Engineers, CRC Press - Taylor & Francis Group, 2011
4. Fulvio Rinaudo, Notes on Land Surveying, Politecnico di Torino – TTPU, 2013
5. Paul A. DeBarry, Watersheds Processes, Assessment and Management, Wiley, 2004
6. Paul T. Williams, Waste Treatment and Disposal 2nd Edition, Wiley, 2008
7. Mackenzie L.Davis, Susan J. Masten, Principles of Environmental Engineering & Science 3th Edition, McGraw-Hill Education, 2013
8. James K. Wight, Reinforced Concrete: Mechanics and Design 7th Edition, Pearson, 2015
9. R.F.Craig, Craig`s Soil Mechanics, CRC Press, 2004
10. Alberto Carpinteri, Structural Mechanics Fundamentals, CRC Press, 1997
11. Robert Horonjeff, Planning and Design of Airports, McGraw-Hill Education, 2010
12. Anna Osello, The future of drawing with BIM for Engineers and Architects, Dario Flaccovio editore, 2012
13. Frederick E. Giesecke, Technical Drawing, Pearson, 2009
14. Colin H. Simmons, Dennis E. Maguire, Manual of Engineering Drawing, Elsevier, 2004
15. K. Morling, Geometric and Engineering Drawing, Elsevier, 2010

**Table 14. USE OF TEACHING MATERIALS BY DISCIPLINE IN TTPU**

No.	Names of disciplines	Teaching materials
<b>1</b>	Geology / Safety and civil protection	Aurele Parriaux, Geology Basics for Engineers, CRC Press - Taylor & Francis Group, 2011
<b>2</b>	Land surveying	Fulvio Rinaudo, Notes on Land Surveying, Politecnico di Torino – TTPU, 2013
<b>3</b>	Geotechnics	R.F. Craig, Craig`s Soil Mechanics, CRC Press, 2004
<b>4</b>	Structural Engineering	James K. Wight, Reinforced Concrete: Mechanics and Design 7th Edition, Pearson, 2015

## 5. Review of available teaching material and teaching methods of SamSACII

**Table 15.** LIST OF LABORATORIES AT OF SamSACII.

No.	Name of Department	Short description
1.	Construction materials	Conducting laboratory tests, measurements and other types of studies of samples (samples) of building materials in accordance with the requirements of technical regulations, state standards and other regulatory legal acts of the Republic of Uzbekistan
2.	Construction structures	Conducting laboratory tests, measurements and other types of studies of samples (samples) of structures in accordance with the requirements of technical regulations, state standards and other regulatory legal acts of the Republic of Uzbekistan
3.	Building physics	Performing laboratory work on thermal protection of buildings, optimal light conditions and soundproofing and interior partitions and floor ceilings.
4.	Geodesy	The laboratory conducts practical training and laboratory work with geodetic instruments.
5.	Water supply and Sewage (sanitation)	The laboratory conducts practical training and laboratory work in Water supply and Sewage (sanitation)
6.	Heat and Gaz supply, Ventilation	The laboratory conducts practical training and laboratory work in Heat and Gaz supply, Ventilation.

**Table 16.** UTILIZATION OF LABORATORIES BY DISCIPLINE

Disciplines	Name of laboratories					
	Construction materials	Construction structures	Building physics	Geodesy	Water supply and Sewage (sanitation)	Heat and Gaz supply, Ventilation
Engineering geology		+		+		
Seismology		+				
Design in hot climates and earthquake resistance of buildings			+			
Calculation of buildings and structures taking into account seismic effects		+				
Reinforced concrete structures.		+				
Metal structures and welding	+					
Construction Materials	+					

Disciplines	Name of laboratories					
	Construction materials	Construction structures	Building physics	Geodesy	Water supply and Sewage (sanitation)	Heat and Gaz supply, Ventilation
National Building Constructions		+				
Structural Dynamics		+				
Structural stability and thin-walled spatial structures		+				
Constructive and heat-insulating materials in construction	+					
Architectural and building structures		+				
Reconstruction of buildings and structures		+				
Survey of buildings and structures		+				
Architecture			+		+	+
Architecture of low buildings			+		+	+
Architectural design of multifunctional buildings			+		+	+
Theory of Architecture and Urban Planning				+	+	+
Engineering cartography				+		
Fundamentals of Surveying and Terrain Planning				+		
Engineering Geodesy				+		
Water supply and Sewage (sanitation)					+	
Heat and Gaz supply, Ventilation						+
Restoration and Reconstruction of Architectural Monuments	+	+		+		
Reconstruction and use of Architectural Monuments	+	+		+		

**Table 17. TEACHING METHOD**

No.	Name	Short description
1.	Lecture	This is one of the most common ways to convey information to the target listener. Oral presentation has long been used for the simultaneous training of a large number of people. A correctly structured lecture activates mental activity, provides an emotional connection between the listener and the speaker, and contributes to a better perception of the material. This learning style is effective in teaching the humanities and natural sciences as well as the exact disciplines.
2.	Explanation	This is a cognitive procedure aimed at enriching and deepening knowledge about the phenomena of the real world by including these phenomena in the structure of certain connections, relations and dependencies, which makes it possible to reveal the essential features of this phenomenon. In the simplest case, the subject of explanation is individual empirically recorded facts.
3.	Study discussion	This is the most developed organizational form of educational dialogue, which allows the teacher and students to come to mutually agreed solutions to complex educational problems, bringing together and clarifying different positions and points of view on the problems under discussion, achieving mutual understanding and recognition of the right of each to his own special position and a different point of view.
4.	Working with literature	This type of sources reflects the latest state of the art and therefore deserves attention. (note-taking, drafting a text plan, testifying, reviewing, drawing up diagrams)
5.	Visual methods	Visual teaching methods are understood as such methods in which the assimilation of educational material is significantly dependent on the visual aids and technical means used in the learning process. (illustration, demonstration, educational laboratory experiment).
6.	Exercises	This is a teaching method that provides for targeted, repeated repetition of certain actions or operations by students in order to form skills and abilities. (oral exercises, written exercises, graphic exercises, laboratory practice exercises).
7.	Laboratory work	This is a teaching method in which students, under the guidance of a teacher and according to a predetermined plan, do experiments or perform certain practical tasks.
8.	Practical work	This is a form of organization of the educational process, involving the performance by students on assignment and under the guidance of a teacher, one or more practical work. The didactic goal of practical work is to form students' professional skills, as well as practical skills necessary for studying subsequent academic disciplines.
9.	Independent work	This is a form of training in which the student learns the necessary knowledge, master's skills and abilities, learns to work systematically, systematically, think, and forms his own style of mental activity. It differs from other forms of education in that it presupposes the student's ability to organize his own activities in accordance with the assigned or arisen task.
10.	Seminar	This is one of the most effective methods of teaching. Seminars are usually preceded by lectures that define the topic, nature and content of the seminar.
11.	Creative works	This is the result of human creative efforts. This concept includes fine arts, literature, painting, music, choreography, etc. Creative work implies the creation of something new and unique (it is unlikely that two people will create the same work). The term is mentioned in the laws of different states and is widespread. Also often used in the context of copyright.



No.	Name	Short description
12.	Working in a group	In each academic group organized several small groups and every group working in finding solutions for problem given by Professor. Every small group making presentation. Then Professor summarizing results and gives recommendations for optimal solution.
13	Simulation of a specific case	Simulation of a specific case: Students are given a specific topographic basis for the design of a specific building or complex of buildings within a city or rural community.
14	Participatory designing	Customer-specific design involves the participation of the land owner in the design of a residential or public building. On the basis of regulatory documents, the proposals of the customer of the object are taken into account and an architectural planning assignment is drawn up and the project is carried out accordingly.

**Table 18.** USE OF TEACHING METHODS BY DISCIPLINE

Disciplines	No. Teaching Methods													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Construction Materials	+	+	+	+	+	+		+	+	+				
Engineering Geodesy	+	+	+	+	+	+		+	+	+				
Architecture of buildings	+	+	+	+	+	+		+	+	+				
Architecture of civil and industrial buildings	+	+	+	+	+	+		+	+	+				
Metal constructions	+	+	+	+	+	+		+	+	+				
Reinforced concrete structures	+	+	+	+	+	+		+	+	+				
Seismic resistance of Buildings	+	+	+	+	+	+	+		+	+				
Engineering Geodesy	+	+	+	+	+	+	+		+	+				
Architectural Constructions	+	+	+	+	+	+	+		+	+				
Architectural Design 1	+	+	+	+	+	+		+	+	+	+	+	+	+
Architectural Design 2	+	+	+	+	+	+		+	+	+	+	+	+	+
History of Architecture	+	+	+	+	+	+	+	+	+	+				
Engineering constructions	+	+	+	+	+	+		+	+	+				
Engineering facilities of buildings	+	+	+	+	+	+		+	+	+				
Architectural Design 3	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Architectural Design 4	+	+	+	+	+	+		+			+	+	+	+
Restoration and Reconstruction of Architectural Monuments	+	+	+	+	+	+		+		+	+	+	+	+
Urban Design	+	+	+	+	+	+		+		+	+	+	+	+
Architectural monuments of Uzbekistan	+	+	+	+	+	+		+			+	+	+	+
Scientific basis for the revival of historical city centers	+	+	+	+	+	+		+			+			
Harmonizing and decorating architectural forms	+	+	+	+	+	+	+			+				
Reconstruction and use of Architectural Monuments	+	+	+	+	+	+		+			+	+	+	+



Disciplines	No. Teaching Methods													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Engineering Geodesy	+	+	+	+	+	+	+			+	+			

List of basic teaching materials.

1. Akhmedov M.K. Architectural Heritage. Tashkent: 2011.
2. Akhmedov M.K. The History of Central Asian Architecture. Tashkent: 2012.
3. Baklanov N.B. Geometrical Ornament of Central Asia. Moskow. 1987.
4. Bulatov M.S. Geometrical Garmonization in Central Asian Architecture. Moskow. 1988.
5. Voronina V.L. Traditions in Architecture of Uzbekistan. Moskow: 1989.
6. Gendel E.M. Engineering works in Restoration of Architectural Monuments. Moskow: 1980.
7. Gutnov A.E. Evolution of Town Building. Moskow: 1984.
8. Koval S.P. Reconstruction and Modernization of Buildings. Moskow: 2012.
8. Mikhalev M.N. Engineering Hidrology. Leningrad: 1980.
9. Lavrov V.A. Town Building Culture of Central Asia. Moskow: 1990. Градостроительная культура Средней Азии. М. Стройиздат. 1990.
10. Notkin I.I. Classification of Historical Residential Buildings. Tashkent: 2010 Pulatov Kh. P. The History of Town Building. Tashkent: 2008.
11. Pugachinkova G.A. The Architecture of Central Asia. Tashkent: 1979.
12. Пугаченкова Г.А. Зодчество Центральной Азии. XVв. – Т., 1979.
13. Rempel A.I. Architectural Ornament of Central Asia. Tashkent: 1961.
14. Rapoport A., House Form and Culture. Prentice Hall, Englewood Cliffs, NJ. -1969
15. Rees W. E., The built environment and the ecosphere: a global perspective. Building Res. Inform, - 1999,
16. Usmanov V.F. Updating Construction Codes of Uzbekistan in seismic regions. Book of abstracts of international symposium Earthquake safe constructions with lightweight steel structures. Tashkent: 2019.
17. Aizenberg Ya.M., Kodysh E.N. and others. Earthquake resistant multi-storey buildings with a reinforced concrete frame, Moscow: 2012.
18. Airapetov G.A. and other Building materials. Rostov-on-Don 2009
19. Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow: 2010.
20. Bayer V.E. Architectural materials science, Moscow: 2012.
21. Drummers Yu.G. Building materials and products, M.: 2010.
22. Batysheva A.I., Smolkina A.A. (ed.) Materials Science and Technology of Materials, Moscow: 2016.
23. Belov V.V., Petropavlovskaya V.B. Building materials, Moscow: 2014.
24. Blagoveshchensky F.A., Bukina E.F. Architectural structures, M.: 2014.
25. Bobrov Yu.L., Ovcharenko E.G. and other. Thermal insulation materials and structures, Moscow: 2010.
26. Bobrov Yu.L., Ovcharenko E.G., Shoikhet B.M., Petukhova E.Yu. Thermal insulation materials and structures, M.: 2010.
27. Bruevich P.N., Samoshkin E.M. Geodesy, M.: 1985.
28. V.V. Gabrusenko Basics of calculating reinforced concrete in questions and answers, M.: 2014.
29. Gusev N.M., Makarevich V.G. Light architecture, Moscow: 1973.
30. G. V. Devyataeva Technology of reconstruction and modernization of buildings, Moscow: 2011.
31. Dobromyslov A.N. Examples of dynamic calculations of reinforced concrete structures, Moscow: 2013.
32. Dobromyslov A.N. Calculation of reinforced concrete structures using the program "Lira", M.: 2015.
33. Dorkin V.V., Ryabtseva M.P. Metal structures, M.: 2012.
34. Drainage systems and treatment facilities, "Stroyinform", 2007
35. Drozd M.I. Materials Science, M.: 2017.
36. Zaikin A.I. Reinforced concrete structures of one-story industrial buildings, Moscow: 2007.
37. Zaitsev Yu. V., Industries V.F. Building structures, Moscow: 1985.

38. Ziangirov R.S. and other, Engineering geology in construction, M.: 1986.
39. Kabantsev O. V., CD-ROM. Calculation and design of multi-storey and high-rise monolithic reinforced concrete buildings, Albany, 2013.
40. Kalinin V.M., Sokova S.D., Topilin A.N. Inspection and testing of structures of buildings and structures, Moscow: 2012.
41. Kirnev A.D., Volosukhin V.A. and others. Technology of erection of buildings and structures from monolithic reinforced concrete for engineering purposes and in special conditions of construction, Rostov-on-Don: 2008.
42. Kolmogorov A.G., Plevkov V.S. Calculation of reinforced concrete structures according to Russian and foreign standards, Moscow: 2014.
43. Kolpaev A.P. and other Geodesy, part 2, Moscow: 1958.
44. Kosenko I.S. Hanging roof structures, Moscow: 1966.
45. Kosygina Yu.A. Geological bodies, Moscow: 1986.
46. Krasnoshchekova N.S. Formation of the natural framework in the master plans of cities, Moscow: 2010.
47. Krasovsky P.S. Building materials, Moscow: 2016.
48. Kuvshinov Yu.Ya. Energy saving in the system of ensuring the microclimate of buildings, Moscow: 2010.
49. Kudishin Yu.I. and others. Metal structures, Moscow.: 2010.
50. Kusainov A.A., Ilyichev V.A. et al. Design of earthquake-resistant structures with dry construction systems, Moscow: 2013.
51. Larchenko M.P., Milovatskaya T.N. and others. Tests and tasks for the course of engineering geodesy, Moscow: 2013.
52. Livanov M.M. Geodesy in construction, Moscow: 1973.
53. Lobov N. A. Dynamics of hoisting cranes, M.: 1987.
54. Lukhyanov V.F. Calculations of the accuracy of engineering and geodetic works, Moscow: 1990.
55. Maklakova T.G., Nanasova S.M. and others. Architecture, Moscow: 2009.
56. Maklakova T.G., Nanasova S.M. Constructions of civil buildings, Moscow: 2012.
57. Malbiev S.A., Teloyan A.L. and others. Building structures: metal structures, reinforced concrete and stone structures, wood and plastic structures, Moscow: 2010.
58. Mandrikov A.P. Examples of calculation of reinforced concrete structures, M.: 2007.
59. Maslov N.N. Fundamentals of soil mechanics and engineering geology, Moscow: 1968.
60. Methodological guide for the design of architectural and planning solutions for multifunctional buildings and complexes, Moscow, 2019.
61. Munchak L.A. Construction of a low-rise residential house. (course design), M.: 2012.
62. Nanasova S.M., Rylko M.A., Nanasov I.M. Design of low-rise houses, M.: 2014.
63. Nizomov J. Construction mechanics. Dynamics of objects, Dushanbe: 1991.
64. Otto Frey Hanging coverings of their forms and designs, Moscow: 1960.
65. Pavlov F.F., Mashkevich V.P., Fedorov B.D. Geodesy, Moscow: 1961.
66. Peshkovsky L.M., Pereskokova T.M. Engineering geology. Textbook for university students, Moscow: 1982.
67. Plevkov V.S., Malganov A.I., Baldin I.V. Reinforced concrete and stone structures of earthquake-resistant buildings and structures, Moscow: 2012.
68. Polishchuk V.P., Chernyaeva R.P. Design of reinforced concrete structures for industrial buildings, Moscow: 2014.
69. Portaev D. The calculation and design of monolithic prestressed structures of civil buildings, Moscow: 2011.
70. Razumova O.S. (ed.) Engineering geodesy in construction, Moscow: 1984.
71. Samarin O.D. Fundamentals of ensuring the microclimate of buildings, Moscow: 2014.
72. Safonov G.N. Labor protection in underground mining, M.: 1990.
73. Seferov G.G. et al. Materials Science, M.: 2011.
74. Seferov G.G., Batiukov V.T. et al. Materials Science, M.: 2011.
75. Sinitsyn S. B. Lectures on the theory of seismic stability, Moscow: 2014.
76. Smirnov A.F. and others. Construction mechanics. Dynamics and stability of structures, Moscow: 1984.



77. Sysoev K.A. Fundamentals of Geodesy and Cartography, M.: 1976.
78. Sysoeva E.V. Architectural structures of low-rise buildings, Moscow: 2012.
79. Sytnin V.S. Construction geodesy, Moscow: 1974.
80. Theodoronsky V.S., Bogovaya I.O. Landscape architecture, Moscow: 2010.
81. Timofeev I.G. Engineering protection of territories, Moscow: 1997.
82. Fedorov V.V. Reconstruction and restoration of buildings, Moscow: 2011.
83. Fedorov V.V., Fedorova N.N., SukharevYu.V. Reconstruction of buildings structures and urban development, Moscow: 2011.
84. N. V. Khramtsov. Building materials science. Laboratoryworkshop, M.: 2011.
85. Tsai T.N., Borodich M.K., Mandrikov A.P. Building structures, M.: 1984.
86. Cherepakhin A. A. Materials Science, Moscow: 2004.

**Table 19. USE OF TEACHING MATERIALS BY DISCIPLINE**

No.	Names of disciplines	Literature
1	Engineering Geodesy	Razumova O.S. (ed.) Engineering geodesy in construction, Moscow: 1984.
		Sytnin V.S. Construction geodesy, Moscow: 1974.
		Bruevich P.N., Samoshkin E.M. Geodesy, M.: 1985.
2	Architectural Constructions	Aizenberg Y.M., Kodysh E.N. and others. Earthquake-resistant multi-storey buildings with a reinforced concrete frame, Moscow: 2012.
		Almazov V.O. Design of reinforced concrete structures according to Euronorms, Moscow: 2011.
		V.V. Gabrusenko Basics of calculating reinforced concrete in questions and answers, M.: 2014.
		Dobromyslov A.N. Examples of dynamic calculations of reinforced concrete structures, Moscow: 2013.
3	History of Architecture	Zaikin A.I. Reinforced concrete structures of one-story industrial buildings, Moscow: 2007.
		Akhmedov M.K. The History of Central Asian Architecture, Tashkent: 2011
		Bulatov M.S. Geometrical Harmonization in Central Asian Architecture. Moscow: 1988.
		Akhmedov M.K. Architectural Heritage, Tashkent: 2012
		Baklanov N.B. Geometrical Ornament of Central Asia, Tashkent: 1987.
		Gutnov A.E. Evolution of Town Building. Moscow: 1988.
Pulatov Kh. The History of Town Building in Central Asia. Tashkent: 1987.		

No.	Names of disciplines	Literature
		Lavrov V.A. Culture of Town Building in Central Asia Moskow: 1988.
4	Architectural Design 1 Architectural Design 2	<p>Uralov A.S. Architecture of low-rise housing buildings, Tashkent: 2009.</p> <p>Nanasova S.M., Rylko M.A., Nanasov I.M. Design of low-rise buildings, M.: 2014.</p> <p>Sysoeva E.V. Architectural structures of low-rise buildings, Moscow: 2012.</p> <p>Munchak L.A. Low-rise residential building structures. (Course design), Moscow: 2012.</p>
5	Engineering constructions	<p>Semenov A.A. Metal structures., Calculation of elements and connections using the SCAD OFFICE software package, M.: 2014.</p> <p>D.V. Portaev Calculation and design of monolithic prestressed structures of civil buildings, Moscow: 2011.</p> <p>Dobromyslov A.N. Calculation of reinforced concrete structures using the program "Lira", M.: 2015.</p> <p>Aizenberg Ya.M., Kodysh E.N. and others. Earthquake resistant multi-storey buildings with a reinforced concrete frame, Moscow: 2002.</p> <p>Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow: 2010.</p>
6	Engineering facilities of buildings	<p>Dobromyslov A.N. Calculation of reinforced concrete structures using the program "Lira", M.: 2015.</p> <p>Kuvshinov Y.Y. Energy saving in the building microclimate system, Moscow: 2010.</p> <p>Samarin O.D. Fundamentals of ensuring the microclimate of buildings, Moscow: 2014.</p> <p>Kalitsun V.I. Gidravlics, water supply and sanitation. Moskow:1980.</p> <p>Tabushnikov Y.A. Engineering facilities of buildings. Moskow:1989.</p> <p>Kedrov V.C. Engineering facilities of buildings. Moskow:1989.</p> <p>Abramov N.N. Water supply of buildings. Moskow:1982.</p> <p>Maklakova T.G., Nanasova S.M. and others. Architecture, M.: 2009.</p> <p>Lavrov V.A. Culture of Town Building in Central Asia Moskow: 1988.</p> <p>Teodoronsky V.S., Bogovaya I.O. Landscape architecture, Moscow:</p>

No.	Names of disciplines	Literature
		<p>Kuvshinov Y.Y. Energy saving in the building microclimate system, Moscow: 2010.</p> <p>Samarin O.D. Fundamentals of ensuring the microclimate of buildings, Moscow: 2014.</p> <p>Rapoport A., House Form and Culture. Prentice Hall, Englewood Cliffs, NJ. -1969.</p>
8	Restoration and Reconstruction of Architectural Monuments	<p>Akhmedov M.K. The History of Central Asian Architecture, Tashkent: 2011</p> <p>Bulatov M.S. Geometrical Harmonization in Central Asian Architecture. Moscow: 1988.</p>
		<p>Akhmedov M.K. Architectural Heritage, Tashkent: 2012</p> <p>Gutnov A.E. Evolution of Town Building. Moscow: 1988.</p> <p>Pulatov Kh. The History of Town Building in Central Asia. Tashkent: 1987.</p>
10	Construction Materials	<p>Barabanshchikov Y.G. Construction materials and publications, M.: 2010.</p> <p>Airapetov G.A. and others. Construction materials, Rostov-on-Don, 2009</p> <p>Belov V.V., Petropavlovskaya V.B. Construction materials, M.: 2014.</p> <p>Krasovsky P.S. Construction materials, Moscow: 2016.</p> <p>Seferov G.G. and others. Material Science, M.: 2011.</p> <p>Seferov G.G., Batiykov V.T. and others. Material Science, M.: 2011.</p> <p>Khramtsov N.V. Construction material science. Laboratory workshop, M.: 2011.</p> <p>Bayer V.E. Architectural Materials Science, Moscow: 2012.</p> <p>Cherepakhin A.A. Material Science, Moscow.: 2004.</p> <p>Batysheva A.I., Smolkina A.A. (ed.) Materials Science and Technology of Materials, Moscow: 2016.</p> <p>Drozd M.I. Material Science, Moscow: 2017.</p>
11	Reinforced concrete structures	<p>Mayilyan R.L., Mayilyan D.R., Veselev Yu. A. Building structures, Rostov-on-Don, 2010</p> <p>Setkov V.I., Serbin E.P. Structural constructions. Calculation and design, M.: 2012.</p>

No.	Names of disciplines	Literature
		<p>Serbin E.P., Setkov V.I. Civil Engineering Constructions, M.: 2010.</p> <p>A.P. Mandrikov Examples of calculation of reinforced concrete structures, M.: 2007.</p> <p>Kirnev A.D., Volosukhin V.A. and others. Technology of erection of buildings and structures from monolithic reinforced concrete, engineering purposes and in special conditions of construction, Rostov-on-Don, : 2008.</p> <p>Aizenberg Y.M., Kodysh E.N. and others. Earthquake-resistant multi-storey buildings with a reinforced concrete frame, Moscow: 2012.</p> <p>Almazov V.O. Design of reinforced concrete structures according to Euronorms, Moscow: 2011.</p> <p>V.V. Gabrusenko Basics of calculating reinforced concrete in questions and answers, M.: 2014.</p> <p>Dobromyslov A.N. Examples of dynamic calculations of reinforced concrete structures, Moscow: 2013.</p> <p>Zaikin A.I. Reinforced concrete structures of one-story industrial buildings, Moscow: 2007.</p> <p>Maklakova T.G., Nanasova S.M. Constructions of civil buildings, Moscow: 2012.</p> <p>Blagoveshchensky F.A., Bukina E.F. Architectural structures, M.: 2014.</p> <p>Sysoeva E.V. Architectural structures of low-rise buildings, Moscow: 2012.</p> <p>Kuznetsov V.S. Reinforced concrete and stone structures, Moscow: 2014.</p> <p>Munchak L.A. Low-rise residential building structures. (Course design), Moscow: 2012.</p> <p>Kuznetsov V.S. Reinforced concrete structures of multi-storey buildings. Course and diploma design, M.: 2013</p>
12	Architecture of buildings	<p>Smirnov A.F. Construction mechanics. Dynamics and stability of structures, Moscow: 1984.</p> <p>Bezukhov N.I. et al. Stability and dynamics of structures in examples and tasks, Moscow: 1987.</p> <p>Lobov N.A. Dynamics of lifting cranes, Moscow: 1987.</p> <p>Bezukhov N.I. et al. Stability and dynamics of structures in examples and tasks, Moscow: 1987.</p>

No.	Names of disciplines	Literature
		<p>Goshi B. Statics and dynamics of knowledge. M.: 1984.</p> <p>Smirnov A.F. et al. Construction mechanics. Dynamics and stability of structures, Moscow: 1984.</p> <p>Nizomov J. Construction mechanics. Dynamics of objects, Dushanbe: 1991.</p>
13	Seismic resistance of Buildings	<p>Aizenberg Ya.M., Kodysh E.N. and others. Earthquake resistant multi-storey buildings with a reinforced concrete frame, Moscow: 2002.</p> <p>Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow: 2010.</p> <p>Kusainov A.A., Ilyichev V.A. Design of earthquake-resistant structures with dry construction systems, Moscow: 2013.</p> <p>Amosov A.A., Sinitsyn B.S. Fundamentals of the theory of seismic resistance of structures, Moscow: 2010.</p> <p>Kusainov A.A., Ilyichev V.A. Design of earthquake-resistant structures with dry construction systems, Moscow: 2013.</p>
14	Metal constructions	<p>Kudishin Y.I. and others. Metal constructions, M.: 2010.</p> <p>Dorkin V.V., Ryabtseva M.P. Metal constructions, M.: 2012.</p> <p>Malbiev S.A., Teloyan A.L. and others. Structural constructions: metal constructions, reinforced concrete and stone constructions, constructions from wood and plastics, M.: 2008.</p> <p>Moskalev N.S. and others. Metal constructions, including welding, M.: 2014.</p> <p>Semenov A.A. Metal constructions., Calculation of elements and connections using the software complex SCAD OFFICE, M.: 2014.</p>
15	Architecture of buildings	<p>Fedorov V.V. Reconstruction and restoration of buildings, Moscow: 2011.</p> <p>Fedorov V.V., Fedorova N.N., Sukharev Yu.V. Reconstruction of buildings, structures and urban development, Moscow: 2011.</p> <p>Kalinin V.M., Sokova S.D., Topilin A.N. Inspection and testing of structures of buildings and structures, Moscow: 2012.</p>
16	Architecture of civil and industrial buildings	<p>Vilchik N.P. Architecture of buildings, Moscow: 2012.</p> <p>F.A. Blagoveshchenskiy, E.F. Bukina Architectural structures, M.: 2014.</p> <p>Sysoeva E.V. Architectural structures of low-rise buildings, Moscow: 2012.</p>

No.	Names of disciplines	Literature
		Zaitsev Yu.V., Promyslov V.F. Building structures, Moscow: 1985.
<b>117</b>	Architectural monuments of Uzbekistan	<p>Akhmedov M.K. The History of Central Asian Architecture, Tashkent: 2011</p> <p>Akhmedov M.K. Architectural Heritage, Tashkent: 2012</p> <p>Bulatov M.S. Geometrical Harmonization in Central Asian Architecture. Moscow: 1988.</p> <p>Baklanov N.B. Geometrical Ornament of Central Asia, Tashkent: 1987.</p> <p>Pulatov Kh. The History of Town Building in Central Asia. Tashkent: 1987.</p> <p>Lavrov V.A. Culture of Town Building in Central Asia Moscow: 1988.</p> <p>Akhmedov M.K. The History of Central Asian Architecture, Tashkent: 2011</p> <p>Akhmedov M.K. Architectural Heritage, Tashkent: 2012</p> <p>Rees W. E., The built environment and the ecosphere: a global perspective. // Building Res. Inform, -1999, 27 (4), 206-220.</p> <p>Krasnoshchekova N.S. Formation of the natural framework in the master plans of cities, Moscow: 2010</p> <p>Lavrov V.A. Culture of Town Building in Central Asia Moscow: 1988.</p> <p>Vilchik N.P. Architecture of buildings, Moscow: 2012.</p> <p>Maklakova T.G., Nanasova S.M. and others. Architecture, M.: 2009.</p> <p>Akhmedov M.K. The History of Central Asian Architecture, Tashkent: 2011</p> <p>Bulatov M.S. Geometrical Harmonization in Central Asian Architecture. Moscow: 1988.</p> <p>Akhmedov M.K. Architectural Heritage, Tashkent: 2012</p> <p>Maklakova T.G., Nanasova S.M. and others. Architecture, M.: 2009.</p>
<b>25</b>	Engineering Geodesy	<p>Razumova O.S. (ed.) Engineering geodesy in construction, Moscow: 1984.</p> <p>Sytin V.S. Construction geodesy, Moscow: 1974.</p> <p>Pavlov F.F., Mashkevich V.P., Fedorov B.D. Geodesy, Moscow: 1961.</p>

No.	Names of disciplines	Literature
		<p>Lukhyanov V.F. Calculations of the accuracy of engineering and geodetic works, M.: 1990.</p> <p>Shilov P.I. Geodesy, Moscow: 1963.</p> <p>Livanov M.M. Geodesy in construction, Moscow: 1973.</p> <p>Livanov M.M. Geodesy in construction, Moscow: 1968.</p> <p>Kolpaev A.P. and other Geodesy, part 2, Moscow: 1958.</p> <p>Bruevich P.N., Samoshkin E.M. Geodesy, M.: 1985.</p>