MINISTRY OF EDUCATION AND SCIENCE OF THE RUSSIAN FEDERATION

Federal State Autonomous Education “Ural Federal University named after the first President of Russia B.N. Yeltsin”

Institute of Construction and Architecture

Signed and Approved

Vice-rector for Research

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ V.V. Kruzhaev

«\_\_\_» \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2018 г.

COURSE PROGRAM

**DEVELOPMENT OF TRANSPORT INFRASTRUCTURE OF CITIES**

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| **The list of information about the work program of the discipline** | **Credentials** |
| **Educational Program**  Urban planning, planning of rural settlements | **Code of EP**  07.06.01/02.01 |
| **Direction**  Architecture (07.06.01) | **Code of direction and level of preparation** 07.06.01 |
| **Level of preparation**  Postgraduate education |
| **FSES** | **Details of the order of the Ministry of Education and Science of the Russian Federation on the approval of the FSES:**  Order of the Ministry of Education and Science of Russia No. 1132 of September 2, 2014 |

**Ekaterinburg**

**2018**

**1. GENERAL CHARACTERISTICS OF THE DISCIPLINE**

**1.1. Annotation of the content of the discipline**

The purpose of studying the discipline "Development of the transport infrastructure of cities" is to deepen knowledge on a number of theoretical problems and master the fundamentals of engineering design of the transport infrastructure of cities.

The tasks of the discipline are to study:

 basics of functional zoning of the territory.

 reconstruction of the planning structure of the city, the system of transport services for the city, residential development.

 fundamentals of engineering and transport provision of the population.

 methods of transport and sociological surveys of the population movements characteristics.

 methods for studying the characteristics of transport and pedestrian traffic.

 methods for assessing the state of the road system of cities.

 fundamentals of engineering design of urban transport infrastructure.

 strategic approaches in transport and urban planning.

 application of modeling in transport and town planning design.

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| 1 | Prerequisites | "The history of science (by industries)"; "Research methods";  "Urban planning, planning of rural settlements" |
| 2 | Corequisites | "Research Seminar" |
| 3 | Postrequisites | Final state certification |

**1.2. Language of implementation of the discipline - Russian**

**1.3. Planned learning outcomes of the discipline**

The result of training in the framework of the discipline is the formation of the following competencies:

 the knowledge of the regulatory framework in the field of engineering surveys, the principles of designing buildings, structures, planning and building settlements (PC-1);

 the ability to analyze and synthesize the current state of urban planning facilities, engineering and transport systems, create new and develop existing methods of calculating and optimizing them (PC-2);

 knowledge of software of modern design and calculation systems, knowledge of programming languages ​​in the field of engineering training, development of social and engineering and transport infrastructure of cities by computer-aided design tools of processes (PC-3);

 the ability to develop technical specifications and feasibility studies for the creation of knowledge-intensive research on the development of social and engineering and transport infrastructure of cities (PC-4).

As a result of mastering the discipline, a graduate student should:

**Know:**

 legal and regulatory frameworks, principles for the preparation and development of relevant transport and town planning documents;

 the main trends and principles of urban planning, problems of settlement,

 features of planning and development of rural settlements,

 the methodology for designing engineering and transport support for the territories, locating and planning the production base of cities and territories, enterprises of social, cultural and domestic purposes, recreational areas, as well as urban planning monitoring and problems of the environmental safety of settlements.

**Be able to:**

 use scientific and methodological principles of urban planning and territorial planning, the development of transport systems.

 know the methods and means of urban planning and design;

 apply in the practice of designing and forecasting the transportation systems of software for urban planning, modeling and development of engineering and transport infrastructure.

**Acquire** (demonstrate skills and experience):

 skills in applying methods and means of planning and designing transport systems;

 independence to study and understand the special (industry) scientific and methodological literature related to the problems of urban transport services.

**2. CONTENT OF THE DISCIPLINE**

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| --- | --- | --- |
| **Code of**  **sections, topics** | **Section, topic of the discipline** | **Content** |
| 1 | Urban Transport Service Problems | Problems of transport service in urban areas, the development of engineering and transport infrastructure  The current state and development prospects |
| 2 | Motorization of cities. | Problems of cities in connection with the high level of automobilization and their solution in domestic and foreign practice. The nature of the use of passenger cars on trips. Problems of organizing places for permanent and temporary storage of cars in different urban areas |

**4.3.3 Indicative topics of individual or group projects**

1. The role and importance of the master plan of the city in the new socio-economic conditions, the direction and boundaries of the development of urban areas, the development of engineering, transport and social infrastructures,

2. The current state and prospects of development of engineering and transport systems in cities of various sizes and rural settlements. The goals and objectives of urban planning solutions of the road network. Improvement of road systems in cities.

3. The concept of development of mass passenger transport in cities in a historical aspect and at the present stage. Organization of public passenger street and off-street transport. New types of transport Organization of transport and pedestrian traffic in the central areas of cities.

4. Transport and sociological research. Types of surveys, purpose and objectives, methods of conducting.

Justification of the volume of the sample when conducting surveys of movements, resettlement, attendance of objects of various functional purposes. The study of patterns of labor and unearned. Methodical bases of carrying out inspections of transport, pedestrian and passenger loading. Processing and results of transport and sociological surveys.

5. Strategy for the development of urban transport systems, the priority of public transport, ways to achieve. Recommendations for the organization of permanent and temporary storage of vehicles in different urban areas. Methods of forecasting the transport load of the road network, the load of passenger transport.

6. Classification of the road network. Fundamentals of the design of elements of the road network. Design of the plan, cross and longitudinal profile. Regulatory requirements

7. Fundamentals of the design of transportation hubs. Classification. Planning support for the organization of traffic in transport hubs. Regulation, justification of optimal regulatory regimes.

8. Organization of pedestrian traffic, creating comfortable pedestrian spaces, pedestrian streets, improving the safety of pedestrian traffic. Organization of cycling in cities

9. Methods of modeling transport and passenger flows, the development of engineering and transport infrastructure.

Application of software systems in the practice of designing and forecasting traffic flows, designing transport infrastructure facilities.

10. Underground urbanization, development of schemes for the integrated use of underground space. Reconstruction of transport hubs in large cities using underground space, their planning and design characteristics. Engineering and transport facilities, substantiation of intersections in different levels. Types of buildings, classes of interchanges in different levels

**7. TRAINING-METHODOLOGICAL AND INFORMATION SUPPORT OF THE DISCIPLINE**

**7.4. Databases, information and reference and search engines**

1. "The Regional Scientific Library of UrFU" (http://lib.urfu.ru)

2. "ConsultantPlus" (http://www.consultant.ru)

3. “GARANT system” (http://www.garant.ru/products/ipo/system/)

4. Wikipedia (https://ru.wikipedia.org/wiki/Zaglavnaya\_strana)

5. “ELS of the Lan publishing center” (http://e.lanbook.com)

6. “EBS JURAYT” (http://www.biblio-online.ru/home?5)

7. "EBS" University Library Online "" (http://biblioclub.ru)

8. “EBD RSL” (http://diss.rsl.ru)

9. “SCOPUS” (http://www.scopus.com)

10. “Scientific Electronic Library” (http://elibrary.ru/defaultx.asp)

11. "A single window of access to educational resources" (http://window.edu.ru)

**7.5 Electronic educational resources**

1. <http://study.urfu.ru/view/Aid_view.aspx?AidId=1011585>
2. <http://study.urfu.ru/view/Aid_view.aspx?AidId=8885>

**8.2.4. List of indicative questions for the term**

1. The role and importance of the master plan of the city in the new socio-economic conditions.

2. Problems of cities in connection with the high level of automobilization and their solution in domestic and foreign practice.

3. The current state and prospects of development of engineering and transport systems in cities of various sizes.

4. Underground urbanization, development of schemes for the integrated use of underground space

5. Transport and sociological research. Types of surveys, purpose and objectives, methods of conducting.

6. Application of software systems in the practice of designing and long-term forecasting of traffic flows, design of transport infrastructure facilities.

7. Strategy of development of transport systems of cities, priority of public transport, ways to achieve.

8. Fundamentals of the design of transport hubs. Classification. Planning support for the organization of traffic in transport hubs. Regulation, justification of optimal regulatory regimes.

9. Organization of pedestrian traffic, the creation of comfortable pedestrian spaces, pedestrian streets, improving the safety of pedestrian traffic. Organization of cycling in cities.

10. Motorization of cities. Problems of cities in connection with the high level of automobilization and their solution in domestic and foreign practice. The nature of the use of passenger cars on trips.

11. Problems and solutions in the organization of places of permanent and temporary storage of cars in different urban areas.