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 New Materials and Technologies

Signed and Approved

Vice-rector for Research

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

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COURSE PROGRAM

**URBAN PLANNING, PLANNING OF RURAL SETTLEMENTS**

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| **List of information about the work program of the discipline** | **Registration data** |
| **Educational program** The level of training of highly qualified personnel | EP Code07.06.01/02.01 |
| **Direction** *Architecture***Directivity***Urban planning, planning of rural settlements*  | **Specialization code and level of education**07.06.01 |
| **Level of preparation**Researcher. Instructor - researcher | **Specialization code and level of education**07.06.01 |
| **FSES** | **Order prerequisites of Ministry of Education and Science of RF on approval of FSES:**Of 30.07.2014 №873(red. Of 30.04.2015) |

**Ekaterinburg**

**2018**

**1. GENERAL CHARACTERISTICS OF THE DISCIPLINE**

**1.1. Abstract of the content of the discipline**

The purpose of studying the discipline "Urban planning, planning of rural settlements" is the deepening of knowledge on a number of theoretical problems and mastering the fundamental principles of urban planning.

To achieve the goal the following tasks are solved:

- study of the foundations of the formation and reconstruction of the functional and planning organization of urbanized territories and settlement systems;

- study of the legal foundations of territorial planning and town planning regulation;

- study of the fundamentals of functional zoning of the territory;

- justification of measures to protect and regulate the quality of the city's air environment;

- study of the fundamentals of engineering and transport support of the population;

- studying the basics of engineering development and preparation of territories for urban development,

 engineering design of the improvement of residential areas.

- study of strategic approaches in urban planning.

The place of the discipline-module in the structure of the educational program

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| --- | --- | --- |
| 1 | Prerequisites | "History and Philosophy of Science", "History of Science (by industry)"; «Methodology of scientific research» |
| 2 | Corequisites | "Research seminar" |
| 3 | Postrequisites | Final State Attestation |

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

**1.3. Planned learning outcomes for 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, develop new and develop existing methods for calculating and optimizing them (PC-2);

•the 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 means of computer-aided design of processes (PC-3);

• the ability to develop technical tasks and feasibility studies for the creation of high-tech 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 and principles for the preparation and development of relevant urban planning documents;

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

• features of planning and development of rural settlements,

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

**Be able to:**

• use the scientific and methodological principles of urban planning and territorial planning, develop territorial schemes of settlement

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

• to use in the practice of designing and forecasting a software system for urban planning design, methods of modeling the tasks of territorial planning and development of engineering and transport infrastructure.

**Acquire:**

• skills in applying the methods and means of urban planning and design;

• independence to study and understand special (industry) scientific and methodological literature related to the problems of urban planning.

**2. CONTENT OF THE DISCIPLINE**

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| Codesection, topic | Section, topicdisciplines \* | Content |
| 1 | Problems and tasks of modern urban development | The current state and prospects for the development of urban and rural settlements.Domestic and world practice. Functional and planning organization of urbanized territories and settlement systems. |
| 2 | Stages of urban planning | Estimated time for designing cities. Fundamentals of management at the stage of planning, design, implementation. |

**4.3.1. An indicative list of household work topics**

1. General plan of the city - the main document that determines the prospects for the development of the city. Legal basis of territorial planning and town planning regulation. Urban planning documentation on the planning of urban and rural settlements. Charter of settlements. Normative and methodological documentation. State town-planning laws, regulations and rules as a part of the legal and normative-technical system of documents in construction. Urban Development Code of the Russian Federation, as the main law regulating urban development. Appointment of the state town-planning cadastre as a state information system of information necessary for the implementation of urban development, including for the implementation of changes in real estate

2. The concept of the planning structure and functional areas of the city. Methods of functional zoning, their classification. Sociological, transport, sanitary and hygienic requirements for the mutual placement of functional areas of the city. Dynamics of planning structures. Socio - demographic, economic and environmental problems solved in the design, operation and future development of the city. Their mutual coordination in urban planning. Engineering-town-planning, engineering-ecological, architectural and aesthetic requirements to the territories of various functional zones

3. Social and planning structure of residential areas. Socially demographic prerequisites for the formation of the structure of residential areas. The system of cultural and consumer services of the city is the main principle of structural construction of residential areas. Social and planning essence of the principle of microzoning. The system of public centers as one of the structure-forming systems of the city. Public service areas. Categories of institutions and devices of the corresponding types of services. Principles of planning organization of community centers

4. The public center of the city. Formation of centers in cities of various sizes. Principles of the organization of public centers. The methods of functional zoning centers, the rational organization in the centers of cities of transport and pedestrian traffic. Architectural spatial organization of the center. Squares, main street of the city, pedestrian street, pedestrian areas of the centers

5. External relations of the city. Urban planning problems of external transport design. Types of external transport. Railway transport. Automobile transport. External automobile communications of the city. Tracing of roads in the area of ​​the city. Water transport. Air Transport. The main devices of external transport, their placement. External transport hub of the city. The definition of the external transport hub of the city, its composition and the interrelations of its individual elements. Principles of complex design of a city transport hub

6. Legal legislation and regulatory framework for urban environment regulation. The concept of environmental law, its relationship with the fundamental and secondary branches of Russian law. The system of ecological law, principles of construction. The main sources of environmental law (the Constitution of the Russian Federation, the Law on the Protection of the Environment of 1991, the new environmental legislation, the Civil Code of the Russian Federation). State ecological expertise and environmental control, goals and principles of implementation. Objects of state ecological expertise, their classification. Subjects of environmental expertise, the procedure for appointing experts and conducting expert reviews. Responsibility for violation of the legislation on state environmental review. International cooperation on environmental issues

7. The city plan is the basis of the transport system. Features of the development of engineering and transport systems in cities of various sizes. Gradoforming importance of configuration and structure of highways Classification of streets and roads of populated areas. Transport hub of the city. The planning structure, taking into account the complete separation of traffic from the pedestrian. Disadvantages of the planning structure of cities in terms of the organization of traffic and pedestrians. Principles and norms for designing a transport network and a route system

8. Urban development of territories. The role of engineering training in urban planning. Questions of engineering training at various stages of urban planning. Communication of engineering training with planning structure and functional zoning of settlements. Requirements for urban development of territories. The tasks of engineering training in the system of measures to improve the living conditions of the population in existing and under construction cities, with the development of individual territories

9. Reconstruction of residential areas. Modernization of the system of social and domestic services of the territory. Reconstruction of engineering systems for residential areas. Modernization of buildings. Reconstruction of elements of improvement of inter-main territories

10. The goals and objectives of the regional planning in the new socio-economic conditions of the Russian Federation. Solution of the territorial and economic structure of the projected area. Formation of architectural and planning structure and functional zoning in order to ensure optimal conditions for the development of production, urban development, preservation and improvement of the natural environment, historical and cultural monuments, provided efficient and integrated use of natural, economic and labor resources

11. Regulation of the use of land in urban and rural settlements in the implementation of urban development. Architectural and planning problems of reconstruction and development of cities and rural settlements. The tasks of combining traditions and innovation in planning and building. The importance of protecting architectural monuments and valuable urban environment in new conditions. Use of features of the natural landscape and traditional methods of development in the formation of the architectural and artistic appearance of cities and rural settlements

12. Tasks of social and economic development of rural areas, taking into account the available natural resources, economic and human resources. Problems of communication between rural areas and administrative industrial and cultural centers. Ways to prevent outflow of people from rural areas and reduce the network of rural settlements

13. Problems of the organization of the existing residential areas. Planning characteristics of the old residential development. Architectural and structural characteristics of the buildings of the basic housing stock. Quality of residential development. Comfortable requirements, hygiene and functionality, safety, life support of building. Aesthetic perception of development. Rationality of exploitation of the building. Investment potential of territories of old building. Sanitation of the territory by methods of reconstruction. Overcoming the unsatisfactory sanitary and hygienic state of the old building. Reconstructive measures ensuring a favorable ecological situation in residential areas

14. Transport problems of cities in conditions of high level of motorization. Experience in solving transport problems in domestic and foreign practice. New technologies in the solution of engineering and transport systems. Modern Russian and foreign experience. Experience in modeling transport and passenger flows in domestic and foreign practice

**7.3.Software**

1. The program complex "LIRA".

2. Software complex COSMOS.

3. ANSYS software package.

4. Software complex SCAD.

5. The software complex MathCAD.

6. Software complex AutoCAD.

7. Information system "Stroikodex".

8. The program complex VISUM and VISSIM.

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

1. "Zonal Scientific Library of UrFU" (access mode: http://lib.urfu.ru)

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

3. "GARANT System" (access mode: http://www.garant.ru/products/ipo/system/)

4. "Wikipedia" (access mode: https://ru.wikipedia.org/wiki/Chapter\_page)

5. "EBS of the publishing center" Lan "» (access mode: http://e.lanbook.com)

6. "EBS YURITE" (access mode: http://www.biblio-online.ru/home?5)

7. "EBS" University library online "» (access mode: http://biblioclub.ru)

8. "EHD RSL" (access mode: http://diss.rsl.ru)

9. "SCOPUS" (access mode: http://www.scopus.com)

10. "Scientific electronic library" (access mode: <http://elibrary.ru/defaultx.asp>)

**7.5. Electronic educational resources**

"Single window of access to educational resources" (access mode: http://window.edu.ru)