

# Construction

South Ural State University

Degree or qualification is awarded: **Bachelor's degree**

Language of study: **Russian**

Mode of study: **full-time, part-time**

Duration: **4 years - full time, 5 years - part time years**

Availability of free education: **yes**

Price: **151 800 rub. - full time, 80 000 rub. - part time**

Programme webpage at the university website:

<https://www.susu.ru/en/education/bachelors-specialist-degree-programs/080301-construction-engineering-buildings>

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The objects of professional activity of bachelors in the field of Industrial and Civil Construction are: industrial and civil buildings, hydraulic engineering and environmental protection structures; building materials, products and structures; heat and gas supply, ventilation, water supply and drainage systems for industrial and civil buildings; environmental facilities; real estate; land; urban areas.

Bachelor in the field of Industrial and Civil Engineering can do the following tasks as a part of his/hers professional activities:

- Survey and design activities: collection and systematization of information and baseline data for the purposes of design of buildings, structures, complexes, transport infrastructure, engineering systems and equipment, planning and development of populated areas; engineering surveys for the purposes of construction and renovation of buildings and structures; design justification and design of elements of building structures, of structures and complexes using universal and specialized software and computing systems, as well as computer-aided design systems; writing design and technical documentation in construction and housing sectors, as well as finalization of documentation concerning completed construction object ; ensuring conformity of developed projects and technical documentation to the given task, standards, norms, rules, specifications and other executive documents; technical and legal assessment of construction, repair and reconstruction projects; drawing up design and budget documentation in the construction and housing sector;
- Production, technological and management activities: organization of workplaces, acceptance and placement of technological equipment; organization of work of small groups of workers, developing staff work plans and managing payroll funds; control over the observance of technological discipline; acceptance, development and maintenance of technological equipment and machines; organization of metrological support of technological processes, the use of standard methods of quality control of construction and operation of construction objects and housing and communal services, as well as of the quality of products, machinery and equipment; fine-tuning and implementation of the technological processes of construction, repair, reconstruction, operation and maintenance of construction objects and housing and communal services, as well as manufacturing building materials, products and structures, manufacturing machines and equipment; implementation of environmental safety measures, environmental reporting in the construction and housing sector; implementation of measures to save energy and increase the energy efficiency of buildings and structures; compiling technical documentation (schedules, instructions, plans, estimates, applications for materials and equipment), as well as writing reports in accordance with approved forms; participation in engineering surveys and designing of construction objects and housing and communal objects; standardization and preparation for certification of hardware, systems, processes, equipment and materials; execution of documentation of the quality management system of the enterprise; carrying out organizational and planning calculations for reorganization of the production site; development of operational work plans of the primary production unit; conducting an analysis of the costs and results of operations of the production unit; organization and execution of construction and installation work, work on the operation, maintenance, repair and reconstruction of buildings, structures and objects of housing and communal services; monitoring and verification of the technical condition, residual life of construction objects, equipment and housing and communal services; organization and testing of building

products, as well as buildings, structures, engineering systems; organization of preparation of construction objects and objects of housing and communal services for seasonal operation; implementation of safety measures and labor protection, reporting on labor protection; participation in the management of the technical operation of engineering systems;

- Experimental research activities: the study and analysis of scientific and technical information, domestic and foreign experience in the field of activity; the use of standard packages for the automation of design and research; participation in carrying out experiments according to specified methods, compiling descriptions of the conducted research and systematization of the results; preparation of data in the prescribed form for use in writing reviews, reports, scientific and other publications; writing reports on the work performed, participating in the implementation of research results and practical developments; testing samples of products manufactured by the construction industry, testing programs;
- Installation, commissioning, service and operational activities: installation, testing, commissioning and operation of structures, engineering systems and equipment of construction facilities, housing and communal facilities; Experimental verification of process equipment and means of technological support; acceptance and implementation of equipment; verification of the technical condition and residual resource of construction objects and objects of housing and communal services, construction and housing equipment; organization of inspections of the current and capital repairs, reconstruction of construction projects and housing and communal services, construction and housing and communal equipment; development and implementation of programs to achieve energy efficiency of buildings and structures; drawing up instructions for the operation of equipment, construction and housing facilities; organization of preparation of construction objects and objects of housing and communal services for seasonal operation; preparation of applications for equipment and spare parts, preparation of technical documentation for repairs; participation in the management of the technical operation of engineering systems; performance of the functions of the customer and technical supervision over the execution of works on the construction, operation, maintenance, reconstruction, repair of construction projects and housing and communal services;
- Entrepreneurial activities: participation in the organization of managerial and entrepreneurial activities in the construction and housing and utilities sphere on the basis of the knowledge of their organizational and legal foundations; application of the basics of ethics and culture of interpersonal communication in the industrial sector and business communication; application of knowledge of the basics of pricing and estimated rationing in the construction and housing sector; participation in the preparation of tender and contractual documentation in the construction and housing sectors, the monitoring of the performance of contracts, civil contracts by suppliers, performers, contractors; preparation of technical tasks for the development, as well as monitoring the implementation of investment programs in the field of construction and housing and communal services; record-keeping for an organization in the construction or housing sector in accordance with the requirements of the legislation.

## **Specializations within this programme**

### **Computer-Assisted Design of Buildings and Structures**

#### **Buildings Construction and Engineering Systems Design**

Students receive basic knowledge within the complex of general-engineering courses, and then proceed to the mastering specialized courses, gaining the skills of designing external and internal networks, and water supply and disposal facilities.

During training, special attention is paid to practical and laboratory studies: students not only learn the quality indicators of natural and waste waters, but also gain skills in the natural waters treatment and conditioning, and in rainfall treatment methods. Thus, students are preparing not only for design, but also for research and technological activities.

### **Industrial and Civil Construction**

#### **Building Materials and Quality Evaluation**

It is aimed at developing students' personal qualities, as well as the formation of general cultural, general-professional

and functional competencies in accordance with the requirements of the Federal State Education Standards of Higher Education. In the field of personal development it is aimed at developing of students' personal qualities that contribute to their creative activities, general cultural growth and social mobility. In the field of education it is aimed at the formation of general cultural, general-professional and functional competencies that allow graduates to work in a chosen field successfully and be competitive in the labour market.

During the training students have a lot of room to fulfil themselves in creative and research activities: participate in research projects, conferences, etc.

## **Urban Construction and Management**

### **Heat and Gas Supply and Building Microclimate**

The goal of the educational program 08.03.01 Construction is development of cultural and professional competences in accordance with FSES 3+ and training of qualified and competitive specialists in the field of Heat and Gas Supply and Building Microclimate; development of autonomy students for the purpose of creating self-sufficient employees.

## **Production of Construction Materials, Goods, and Structures**

### **Industrial and Civil Construction**

The goal of the educational program 08.03.01 Construction, field of Industrial and Civil Construction is development of cultural and professional competences in accordance with FSES 3+ and training of qualified and competitive specialists in the field of industrial and civil construction; development of autonomy students for the purpose of creating self-sufficient employees.

## **Water Supply and Drainage**

### **Materials Science in Construction Engineering and Quality Evaluation**

It is aimed at developing students' personal qualities, as well as the formation of general cultural, general-professional and functional competencies in accordance with the requirements of the Federal State Education Standards of Higher Education. In the field of personal development it is aimed at developing of students' personal qualities that contribute to their creative activities, general cultural growth and social mobility. In the field of education it is aimed at the formation of general cultural, general-professional and functional competencies that allow graduates to work in a chosen field successfully and be competitive in the labour market.

During the training students have a lot of room to fulfil themselves in creative and research activities: participate in research projects, conferences, etc.

## **Realty Inspection and Management**

### **Urban Planning**

Students learn the specifics of engineering surveys, repair and reconstruction of buildings and structures; engineering equipment and urban landscaping, and transport infrastructure. Students learn modern methods of integrated engineering improvement, urban planning and environmental safety, planning, development and reconstruction of residential areas, modern geodetic support for construction operations.

The Department has modern geodetic equipment, cartographic materials for the implementation of educational and research work. Ambitious students participate in scientific conferences and get to publish their works.

## **Roads**

## **Water Supply and Disposal**

The goal of the educational program 08.04.01 Construction is development of cultural and professional competences in accordance with FSES 3+ and training of qualified and competitive specialists in the field of Water Supply and

Disposal; development of autonomy students for the purpose of creating self-sufficient employees.

### **Technical Maintenance of Communal and Housing Facilities**