



### Master's Educational Program

#### Name of the program

მშენებლობა
Construction

#### Faculty

სამშენებლო
Civil Engineering

#### Program Supervisor

Professor Tamaz Khmelidze
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#### Qualification to award

<p>Direction, Field / Specialty and / or Subordination / Specialization in Georgian მაგისტრი (Master of Direction, Field / Specialty and / or Subordinate / Specialization in English) <i>In case of implementation of no less than 120 credits of the educational program</i> ინჟინერიის მაგისტრი მშენებლობაში არჩეული სამაგისტრო თემატიკის შესაბამისი სპეციალიზაციით მიენიჭება საგანმანათლებლო პროგრამის არანაკლებ 120 კრედიტის შესრულების შემთხვევაში</p> <p>ა) ინჟინერიის მაგისტრი მშენებლობაში სამოქალაქო და სამრეწველო მშენებლობის სპეციალიზაციით; Engineering master in construction with major in Civil and Industrial construction;</p> <p>ბ) ინჟინერიის მაგისტრი მშენებლობაში გრუნტების მექანიკა და ფუძე-საძირკვლების სპეციალიზაციით; Engineering master in construction with major in soil mechanics and base-foundations;</p> <p>გ) ინჟინერიის მაგისტრი მშენებლობაში მშენებლობის ტექნოლოგიის სპეციალიზაციით; Engineering master in construction with major in construction technology;</p> <p>დ) ინჟინერიის მაგისტრი მშენებლობაში კომპიუტერული პროექტირება მშენებლობაში სპეციალიზაციით; Engineering master in construction with major in Computer projecting in Construction;</p> <p>ე) ინჟინერიის მაგისტრი მშენებლობაში წყალმომარაგება და წყალარინების სპეციალიზაციით; Engineering master in construction with major in water - supply and sewerage;</p> <p>ვ) ინჟინერიის მაგისტრი მშენებლობაში ჰიდროელექტროსადგურების ჰიდროტექნიკური მშენებლობის სპეციალიზაციით; Engineering master in construction with major in hydro electrical stations hydro power</p>
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engineering;

ზ) ინჟინერიის მაგისტრი მშენებლობაში სამდინარო ჰიდროტექნიკური ნაგებობების მშენებლობის სპეციალიზაციით;

Engineering master in construction with major in river hydro technical structures construction;

თ) ინჟინერიის მაგისტრი მშენებლობაში საზღვაო ნაგებობების მშენებლობის სპეციალიზაციით;

Engineering master in construction with major in marine facilities construction;

ი) ინჟინერიის მაგისტრი მშენებლობაში ხიდებისა და გვირაბების მშენებლობის სპეციალიზაციით;

Engineering master in construction with major in bridges and tunnels construction;

კ) ინჟინერიის მაგისტრი მშენებლობაში რკინიგზის მშენებლობის სპეციალიზაციით;

Engineering master in construction with major in railway construction;

ლ) ინჟინერიის მაგისტრი მშენებლობაში ნაგებობათა გამოცდა და ტექნიკური ექსპერტიზის სპეციალიზაციით;

Engineering master in construction with major in testing structures and technical expertise;

მ) ინჟინერიის მაგისტრი მშენებლობაში საშენი მასალების სპეციალიზაციით;

Engineering master in construction with major in building materials;

ნ) ინჟინერიის მაგისტრი მშენებლობაში თბაირმომარაგება და ვენტილაციის სპეციალიზაციით;

Engineering master in construction with major in thermal gas supply and ventilation;

ო) ინჟინერიის მაგისტრი მშენებლობაში საავტომობილო გზებისა და აეროდრომების მშენებლობის სპეციალიზაციით;

Engineering master in construction with major in motorways and airport construction.

პ) ინჟინერიის მაგისტრი მშენებლობაში გაზმომარაგების სისტემების მშენებლობისა და ექსპლუატაციის სპეციალიზაციით;

Engineer Master in Construction of Construction and maintenance of gas supply systems specialization;

ჟ) ინჟინერიის მაგისტრი მშენებლობაში სამშენებლო მექანიკისა და სეისმომედეგი მშენებლობის სპეციალიზაციით

Engineer Master in Construction of Structural Mechanics and Seismoproof construction specialization;

*მიენიჭება საგანმანათლებლო პროგრამის არანაკლებ 120 კრედიტის შესრულების შემთხვევაში*

## The language of teaching

Georgian

## Precondition for admission to the program

Masters have the right to have at least a bachelor or a person with a degree equivalent to an academic degree, who will be based on the results of the MA Exams ( General master exam and exams examined by GTU). The tests and will be placed on the web page of teaching department of GTU <http://www.gtu.ge/study/index.php> All least one month before the exams start. Enrollment without passing the Master's Exams can be done in accordance with the procedure established by the Ministry of Education and Science of Georgia.

## Description of the program

The program is compiled with ECTS system, 1 credit equals 25 hours, which means both contact and

independent working hours. The distribution of credits are presented in the curriculum. Master's educational program includes 120 credits (ECTS). One academic year – 60 credits, in semester 30 credits, The students annual work load may exceed 60 credits, but not more 75 (ECTS) credits or be less 60 credits.

Training component-75 credits and searching component 45 credits. Masters educational program lasts 2 years (4 semesters). The semester includes 20 weeks from here training process continues is 15 weeks.

The graduate is entitled to complete the final examination, which has completely fulfilled all the conditions with the educational program and minimum competence margin has been overcome in interim estimates. At the same time the minimum amount of work defined by the program was passed. The score of the assessment on the interim assessment and the final examination are 41-50 (collecting FX-failed couldn't pass) of the assessment, they have the right during the sessions period, the additional exam will go once again. The interval between the final and the addition test must be at least 5 days.

The score received by the Master of the additional Examinations does not add to the score received in the final exam.

The assessment received in addition to the exam is the final assessment and reflected in the final assessment of the educational program component. The level of achievement of student learning results in each component of the program consists of intermediate assessments, which includes current activity, mid-test exam and final exam. Each component of the evaluation has minimum competence limit, which defined by academic(staffs) and written in syllabus.

Educational program includes following special Master Degree in Specialization:

- Civil and Industrial construction
- Ground mechanics and base foundations
- Building technology
- Computer designing in construction
- Water Supply and Wastewater
- Hydropower construction of hydro power plants
- Construction of river – hydroelectric buildings
- Construction of bridges
- Railway construction
- Testing and technical expertise
- Building materials
- Thermal and ventilation
- Construction of motorways and aerodromes
- Construction and exploitation of gas supply systems
- Construction mechanics and seismic construction.

**Program research component** does not exceed 45 credits and consists of the following components:

Master Research Project / Prospectus - 5 credits, II semester

Theoretical / Experimental Research / Colloquium - 10 credits, III semester

Completion and presentation of master thesis - 30 credits, IV semester

**Master Research Project / Prospectus** should look at the subject matter of the study, theoretical, practical value of the selected topic. The author should know what types of resources (literature, statistics) are based on and where to find this resource. Prospectus should include the results of processing the relevant literature and the necessary bibliography, as well as the history of the research. It should be briefly presented what is currently being done in this direction and what is currently being done (who works and what direction). The author should establish the main issues of the research, present a work plan.

The capacity of the Master Research Project - Prospectus should be approximately 8-10 pages without annexes.

**Theoretical / Experimental Research / Colloquium**

The main objective of the theoretical / experimental study is to develop independent work skills, to create a clear presentation of the theme of solving the main professional tasks, to acquire the modern methods of research, to establish and solve the issues raised during the work. In the scope of the study he is tasked to prepare one colloquium.

Colloquium providing presentation of the material related to the master topic / its parts. The main goal of the colloquium is to systemize the knowledge of the master's degree, presenting the results of the work, and the ability to communicate with the professional community. In the colloquium, the master must demonstrate the amount of the subject matter and the specific issue examined, to present the results.

The amount of the work to be published on the colloquium should be about 12-15 pages without annexes.

#### **Completion and presentation of master thesis (qualification work)**

The qualification work is a major part of the research component. The completed qualification work should be the result of independent research work of the Master. The qualification work should reflect the results obtained from the theoretical / experimental research. The amount of a master's thesis should be typically no less than 70 and not more than 100 pages.

For more information, see the following documents:

Regulation of Georgian Technical University on Master's Degree-

[http://gtu.ge/Study-Dep/Files/Pdf/mag\\_debuleba\\_2017\\_SD.pdf](http://gtu.ge/Study-Dep/Files/Pdf/mag_debuleba_2017_SD.pdf)

Undergraduate Personal plan

[http://gtu.ge/Study-Dep/Files/Pdf/mag\\_deb\\_3%20danar\\_%20%2080817\\_SD.pdf](http://gtu.ge/Study-Dep/Files/Pdf/mag_deb_3%20danar_%20%2080817_SD.pdf)

Rule of Evaluation of the Masters Educational Program Research Component

[http://gtu.ge/Study-Dep/Files/Pdf/mag\\_deb\\_dan4\\_80217\\_SD.pdf](http://gtu.ge/Study-Dep/Files/Pdf/mag_deb_dan4_80217_SD.pdf)

Instructions for submitting the paper for the Master's degree

[http://gtu.ge/Study-Dep/Files/Pdf/magist\\_debuleba\\_dan5\\_2017\\_SD.pdf](http://gtu.ge/Study-Dep/Files/Pdf/magist_debuleba_dan5_2017_SD.pdf)

### **The purpose of the program**

- Create a learning environment that will ensure the development of the personal characteristics of the masters and formation of the necessary competences for professional activities;
- To prepare a master of construction, after completing an educational program, in accordance with the labor market requirements, with the knowledge and skills required to independently start implementation in construction space and to correctly carried out the construction process;
- To learn the complex engineering problems in the construction industry using new methods and approaches;
- To learn independently working on design normative documentation and delivering quality-oriented construction site for operation;
- Prepare an active specialist for a career in construction field that will be motivated to achieve more in professional terms.
- Master's program will facilitate for development accordingly of the modern requirements specialist from student's as well as to develop awareness, independently implementation of the research, sound conclusions and rapidly upgrade skills.

### **Learning Outcomes and Competences (General and Sectoral)**

- **Knowledge and Understanding** – the Graduates will Have:
- Deep and systemic knowledge of the field of construction that enables new, original ideas to be developed with appropriate specialization.
- Deep and systematic knowledge of concepts of building design, technological processes of construction;
- Knowledge required for the engineering preparation of construction and execution of high quality of construction-installation works;
- Ability to search for ways to solve problems design of building;
- Developing original ideas for construction with innovative structural systems, including modern scientific achievements;
- Systemic knowledge of technical and economic justification of project design solutions;
- Ability to properly determine and evaluate risk factors during design, construction and exploitation of buildings.
- Ability to independently develop and implement the measures for survey of existing building structures and their reinforcement measures if needed;
- Deep and systemic knowledge of construction norms and rules, complex issues of technological processes, terms, basic definitions and methods in construction process

**Understands:**

- The need for technically justified organizational and economic solutions to solve existing problems;
- The ways of solving separate problems of buildings and systems, taking into account the risk factors.

**Ability to use Acquired Knowledge and Skills in Practice** – the Graduates will Have and be Able to:

- Action in new, unforeseen and multidisciplinary environment; search for new, original ways of solving complex problems in field, including specialized research using the latest methods;
- Planning and analysis of independent experiments, data mathematical and statistical processing using the latest methods and approaches;
- Ability to independently performing of works, in accordance with the construction norms and rules, taking into consideration requirements for construction;
- Independently implement construction, field and technical supervision at all stages from beginning up to end;
- Ability to independently manage construction using modern engineering and technologies;
- Independently carrying out of all stages of construction and project activities from the idea up to finish.

**Conclusion-Making Skills** – the Graduates will Have:

- Ability to making reasonable conclusions based on the full information of the application of normative legal documents in professional activities;
- Ability to summarization of the risk factors based on proper acknowledgement, evaluation and critical analysis during construction and exploitation;
- Has the ability to search and analyze the latest research information from scientific-technical literature and Internet.
- Ability to innovative synthesis of information on the basis of analysis of the originally performed job, based on the construction standards;
- Ability to interpret modern technologies and materials used for construction, execution of practical work and received data for construction

**Communication Skills** – the Graduates will Have:

- Taking into consideration the communication technologies, independently preparing a detailed report, and the ability to deliver information in Georgian and English public to the civil engineer community.
- Ability to participate in the considerations and discussions with the field specialists on sound conclusions and research methods;
- Ability to independently compile a business document using civil engineering terminology;
- Ability to communicate with the academic or professional community in the relevant format;

**Learning Skills** – the Graduates will Have:

- independently conducting the learning process, high level of strategic planning and multilateral assessment;
- Ability to see the connection between theoretical knowledge and practical activity, determine the needs of learning on a higher level of independence at the next level;
- Determine and implement on the basis of self-esteem, priorities of educational activities and its perfection.

**Values:**

- Graduates have the ability to act in accordance with the basic laws of ethics, assign the professional and ethical responsibility of the civil engineer to the public safety and health as well as on aesthetic values;
- Encourages ecological systems to respect and environmental commitments;
- Ability to protect professional values (honesty, civic consciousness and activity, accuracy, punctuality, objectivity, organization and etc.);
- Participates in establishing such new values that will ensure public security, health and well-being
- Ability to determine the need for learning throughout all life.

**Methods of achieving learning outcomes (teaching and learning)**

Lecture  Seminar (work in group)  Practical  Laboratory  practice  Course paper / project  Master's paper  Consultation  Independent work

Based on the specific course of study in the learning process, the relevant below listed activities of the teaching-learning methods are used, which are reflected in the relevant training courses (syllabus):

1. **Discussion/debates.** This is the most widely spread method of interactive teaching. A discussion process greatly increases the quality of students' involvement and their activity. A discussion may turn into an argument and this process is not merely confined to the questions posed by the teacher. It develops students' skills of reasoning and substantiating their own ideas.
2. **Cooperative teaching** is a teaching strategy in the process of which each member of a group not only has to learn the subject himself, but also to help his fellow-student to learn it better. Each member of the

- group works at the problem until all of them master the issue.
3. **Collaborative work**; using this method implies dividing students into separate groups and giving each group its own task. The group members work at their issues individually and at the same time share their opinions with the rest of the group. According to the problem raised, it is possible to shift the functions among the group members in this process. This strategy ensures the students' maximum involvement in the learning process.
  4. **Problem-based learning (PBL)** is a method which uses a concrete problem as the initial stage both for acquiring new knowledge and integration process.
  5. **Eurastic method** is based on the gradual solution of the task set. This process is carried out independently of the learning facts and by seeing the connections between them.
  6. **Case study** – the teacher discusses concrete cases together with the students and they study the issue thoroughly. E.g., in the sphere of engineering safety it can be a discussion of a concrete accident or catastrophe, or in political science it can be a study of a concrete
  7. **Brain storming** – this activity implies to form and promote radically different opinion, idea on concrete issue/problem. This activity contributes to the development of a creative approach to the problem. Its application is effective in case of a large number of students and consists of several main stages: – Problem / issue determination in a creative perspective; – In a certain period of time, without criticism, note the ideas expressed by the listeners (mainly on the board); – Determination of assessment criteria to determine the establish the conformity of the idea with the aim of the research; – Assessment of selected ideas with predetermined criteria; – By process of elimination, distinguish those ideas that are most relevant to the issue. – Demonstration of the highest evaluation idea as the best way to solve the set problem
  8. **Role and situational games** – games that are fulfilled according to predefined scenario allow students to look at the issue differently. It helps them to develop an alternative viewpoint. Like discussions, these games also formulate the student's ability to express and protect his/her position independently
  9. **Demonstration method** implies presenting information with the help of visual aids. It is quite effective in reaching the required result. It is frequently advisable to present the material simultaneously through audio and visual means. The material can be presented both by a teacher and a student. This method helps us to make different steps of perceiving the teaching material more obvious, specify what steps the students are supposed to take independently; at the same time this strategy visually shows the essence of an issue/problem. Demonstration can be very simple.
  10. **Induction** is such a form of transmitting any knowledge when the process of thinking in the course of the study is directed towards generalization, in other words when delivering the material the process is going from concrete to general.
  11. **Demonstration method** implies presenting information with the help of visual aids. It is quite effective in reaching the required result. It is frequently advisable to present the material simultaneously through audio and visual means. The material can be presented both by a teacher and a student. This method helps us to make different steps of perceiving the teaching material more obvious, specify what steps the students are supposed to take independently; at the same time this strategy visually shows the essence of an issue/problem. Demonstration can be very simple.
  12. **Analytical method** helps us to divide the whole teaching material into constituent parts. In this way the detailed interpretation of separate issues within the given complex problem is simplified.
  13. **Synthetic method** implies forming one issue from several separate ones. This method helps students to develop the ability of seeing the problem as a whole.
  14. **Verbal or oral method** comprises a lecture, narration, conversation, etc. During the process the teacher conveys, explains the material verbally, and students perceive and learn it by comprehending and memorizing.
  15. **Written method** implies the following forms of activity: copying, taking notes, composing theses, writing essays.
  16. **Practical activity** unite all the teaching forms that stimulate developing practical skills in students. In this case a student independently performs different kinds of activity on the basis of the knowledge acquired
  17. **Explanatory method** is based on discussing a given issue. In the process of explaining the material the teacher brings concrete examples the detailed analysis of which is made in the framework of the given

topic.

18. **Activity-oriented teaching** implies teachers' and students' active involvement in the teaching process, when practical interpretation of the theoretical material takes place.
19. **Designing and presenting a project.** While designing a project a student applies the knowledge and skills he has acquired for solving a problem. Teaching by means of designing projects increases students' motivation and responsibility. Working on a project involves the stages of planning, research, practical activity and presenting the results according to the chosen issue. The project is considered to be completed if its results are presented clearly, convincingly, and correctly. It can be carried out individually, in pairs or in groups; also, within the framework of one or several subjects (integration of subjects); on completion the project is presented to a large audience.

### **Student knowledge assessment system**

Grading system is based on a 100-point scale.

Positive grades:

- (A) - Excellent - the rating of 91-100 points;
- (B) – Very good - - the rating of 81-90 points
- (C) - Good - the rating of 71-80 points
- (D) - Satisfactory - the rating of 61-70 points
- (E) - Enough - the rating of 51-60 points

Negative grades:

- (FX) - Did not pass - 41-50 points of rating, which means that the student needs more work to pass and is given the right to take the exam once more with independent work;
- (F) – Failed - 40 points and less, which means that the work carried out by the student is not enough and he/she has to learn the subject from the beginning.

### **Opportunity to continue learning**

Doctoral Educational Programs

### **Employment field**

Within the frame of mentioned program has acquired knowledge of the graduates will be able to successfully work and career growth in the industrial and commercial enterprises, social organizations, government agencies, consulting firms and agencies, international organizations, construction and energy companies in the relevant ministries of sector, municipal supervision and architecture department, motor road department; utility services in towns; in banks; water supply and wastewater regional, municipal and republican organizations; heat and air supply, ventilation and gas supply design companies, Georgian Railway and other organizations. (Graduates will be employed on the positions envisaged by the respective standards of Master's Qualification).

### **Possibility to continue the education**

PhD educational programs

## Human and material resources necessary for the implementation of the program

The program is provided with appropriate human and material resources. For more information see attached documents.

Number of attached syllables: 149

### Program Study Load 1

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Composite structures in construction	N/E	5			
5	Building technical Expertise	N/E	5			
6	Theoretical studies of prestressed teroo-concrete structures	Composite structures in construction		5		
7	Mechanics of the Thin-walled Spatial Systems	N/E	5			
8	Strengthening Basic Foundations	N/E	5			
9	Special wood and plastic constructions	N/E		5		
10	The building - building modern methods of calculation	N/E		5		
11	Transforming (space, ground) structures and facilities	N/E		5		
12	Design and operation of buildings and structures in seismically active regions	The building - building modern methods of calculation			3	
13	Metal structure	N/E			4	
14	Reinforced concrete structures	Theoretical studies of prestressed teroo-concrete structures			4	
15	Reconstruction of building-masked frames of building-structures	The building - building modern methods of			4	



		calculation				
16	Management, design and security in emergency situations	N/E			5	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

## Program Study Load 2

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Soil Mechanics	N/E	9			
5	Foundation Engineering	Soil Mechanics		9		
6	Computer Programs for Designing Buildings	N/E	6			
7	Strengthening Basic Foundations	Soil Mechanics			10	
8	Reconstruction of building-masked frames of building-structures	N/E		5		
9	City Engineering Structure	Computer Programs for Designing Buildings		6		
10	Depreciation of buildings	Reconstruction of building-			10	

		masked frames of building-structures				
11	Geotechnical engineering	N/E	5			
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		<b>5</b>		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			<b>10</b>	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				<b>30</b>
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 3

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Software Package of Mathematical Models of Computational Processes	N/E	5			
5	Construction Economics	N/E	5			
6	Building Materiology	N/E	5			
7	Technologies of construction	N/E		6		
8	Construction Special Constructions	N/E		7		
9	Construction legislation and normative documentation on construction	Technologies of construction			5	
10	Building buildings, diagnostics, reconstruction, modernization	Technologies of construction			5	
11	Technology of building special facilities	Technologies of			5	

		construction				
12	Viable technological solutions of building processes and buildings	N/E		7		
13	Monolithic building-building technology	N/E	5			
14	Energysaving technologies in construction	N/E			5	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>32</b>	<b>28</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

#### Program Study Load 4

Nº	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Numerical Methods of Solving Construction Tasks	N/E	6			
5	Structured Programming with C++ Language	N/E	8			
6	Application of The optimization methods in construction	N/E		9		
7	Construction Special Constructions	N/E			5	
8	Application of the finite elements method in construction	Numerical Methods of Solving Construction Tasks			9	

9	Control of date Bases Visual FoxPro	N/E		6		
10	Computer Programs for Designing Buildings	Control of date Bases Visual FoxPro			6	
11	Software Package of Mathematical Models of Computational Processes	N/E	6			
12	Reconstruction of building-masked frames of building-structures	Construction Special Constructions		5		
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 5

Nº	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Theory and Methodology for Computation of Water Supply and Distribution and Computer Provision	N/E			10	
5	Designing water supply and sewerage systems for residential and industrial facilities	N/E			10	
6	Water Supply and Wastewater Pumping Saddles Design	N/E	10			
7	Receiving natural waters and designing the water treatment	Water Supply		6		

	plant	and Wastewater Pumping Saddles Design				
8	Design of Wastewater Treatment Structures	Water Supply and Wastewater Pumping Saddles Design		7		
9	Rational use, monitoring and protection of water resources	Water Supply and Wastewater Pumping Saddles Design		7		
10	The reliability of water supply systems, basics of design and management	N/E	10			
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 6

Nº	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Engineering Hydroecology	N/E	6			
5	Flood Risk Management	N/E	6			

6	The use of statistical methods and stochastic models in the design and operation of hydroelectric power stations.	N/E	9			
7	Economic justification for the construction of Hydroelectric power plants	The use of statistical methods and stochastic models in the design and operation of hydroelectric power stations.		7		
8	Financing methods of investment projects in hydro energy	Economic justification for the construction of Hydroelectric power plants			10	
9	Production of Hydraulic Construction Using Modern Technologies	Organization of construction of Hydroelectric power plants			10	
10	Projecting of hydroelectric power plants and Modes of operation	N/E		7		
11	Organization of construction of Hydroelectric power plants	N/E		6		
			<b>Per semester</b>	<b>30</b>	<b>25</b>	<b>20</b>
			<b>Total:</b>	<b>75</b>		
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
			<b>Total per semester:</b>	<b>30</b>	<b>30</b>	<b>30</b>
			<b>Total per year:</b>	<b>60</b>		<b>60</b>
			<b>Total:</b>	<b>120</b>		

### Program Study Load 7

Nº	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			

2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Engineering Hydroecology	N/E	6			
5	Flood Risk Management	N/E	6			
6	Strength and Seismicity Resistance of Hydraulic of Structures	N/E		10		
7	Strength and Seismicity Resistance of Hydraulic of Structures	Production of Hydraulic Construction Using Modern Technologies			10	
8	Hydraulics of Structures	N/E	8			
9	Design and construction of Hydraulic Structures	Hydraulics of Structures			10	
10	Production of Hydraulic Construction Using Modern Technologies	N/E		10		
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 8

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German)	N/E		5		

	2.4 Theory and Practice of specialized Translation (Russian)					
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Engineering Hydroecology	N/E	6			
5	Natural disasters and engineering measures to ensure safety	N/E	5			
6	Computer programming in marine construction	N/E		10		
7	Seaports and Constructions of the Continental Shelf	N/E		10		
8	Calculation methods of wave movements in coastal areas	N/E	9			
9	Shipping roads and ports	N/E			6	
10	Organization and production of marine hydraulic structures.	Seaports and Constructions of the Continental Shelf			9	
11	Economic foundation of sea port construction.	N/E			5	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 9

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to	N/E	5			



	the building					
4	Risk Investment Project Risks and Environmental and Social Impact Assessment	N/E			6	
5	System approach for choosing the location of artificial structures	N/E	5			
6	Urban underground structures and subways	N/E	8			
7	Mechanics of underground structures and design of transport tunnels in seismic zones	N/E			7	
8	Restoration and reconstruction of transport tunnels	Urban underground structures and subways		8		
9	Calculation of road artificial structures and seismic resistant bridges	N/E		5		
10	Reinforced concrete large span bridges	N/E	7			
11	Large span steel bridges	System approach for choosing the location of artificial structures		7		
12	Modern methods of construction thebig-spanbridges and their survey-testing	Reinforced concrete large span bridges, Large span steel bridges			7	
			<b>Per semester</b>	<b>30</b>	<b>25</b>	<b>20</b>
			<b>Total:</b>	<b>75</b>		
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
			<b>Total per semester:</b>	<b>30</b>	<b>30</b>	<b>30</b>
			<b>Total per year:</b>	<b>60</b>		<b>60</b>
			<b>Total:</b>	<b>120</b>		

### Program Study Load 10

Nº	Course Title	Precondition of admit	ECTS Credits				
			I Year		II Year		
			Semester				
			I	II	III	IV	

1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	System approach for choosing the location of artificial structures	N/E	4			
5	Risk Investment Project Risks and Environmental and Social Impact Assessment	N/E			6	
6	Calculation the Railroad Track for strength and stability	N/E	10			
7	Interaction Between the Railway and Rolling Stock	N/E		6		
8	Expressway and Specialized Railways	N/E		8		
9	Providing of Tran traffic safety in complex condition	N/E			6	
10	Modernization and Strengthening of Existing Railways	N/E	6			
11	Railway construction in difficult conditions	Calculation the Railroad Track for strength and stability		6		
12	Track monitoring and assessment of the status of rail faults	Calculation the Railroad Track for strength and stability			8	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 11

№	Precondition of admit	ECTS Credits	
		I Year	II Year

	Course Title		Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Technical diagnosis	N/E	6			
5	Active and Passive Systems for Protection of Structures	N/E	5			
6	Causes, inspections and restoration of building structures	N/E		7		
7	Non-infringing Control Methods	N/E	9			
8	The Teknikal Diagnostics of Construqcion Damige	Technical diagnosis		8		
9	Mechanics of Rupture	Technical diagnosis		5		
10	Building technical expsertize	The Teknikal Diagnostics of Construqcion Damige			10	
11	Construction Special Constructions	Mechanics of Rupture			5	
12	Reconstruction of building-masked frames of building-structures	Causes, inspections and restoration of building structures			5	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

**Program Study Load 12**

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Software Package of Mathematical Models of Computational Processes	N/E	4			
5	Construction Economics	N/E	5			
6	Monolithic building-building technology	N/E			7	
7	Concrete sciences	N/E		9		
8	Facilities of building materials manufactures	N/E		6		
9	Construction Special Constructions	N/E	5			
10	Modern methods of building materials physical and mechanical properties study	N/E		5		
11	Construction Materials research and control methods	Concrete sciences			6	
12	Building materials substances, fillers and items	N/E	6			
13	Desingn for enterprise of building materials	Facilities of building materials manufactures			7	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	

<b>Total:</b>	<b>120</b>
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### Program Study Load 13

Nº	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Special course of Building Physics	N/E			10	
5	Heating special course	N/E	6			
6	Special Course of Aerodynamics and Ventilation.	N/E	7			
7	Air-conditioning and Smooth Supply	N/E		6		
8	Special Course of Gas Supply	N/E		8		
9	Buildings Energy Efficiency and Energy Saving	Heating special course			10	
10	Buildings Microclimate Automatic Control Systems	N/E	7			
11	Non-traditional Renewable Energy Technologies inCivil Engineering	N/E		6		
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 14

Nº	Precondition of	ECTS Credits
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	Course Title	admit	I Year	II Year		
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	System approach for choosing the location of artificial structures	N/E	4			
5	Risk Investment Project Risks and Environmental and Social Impact Assessment	N/E			6	
6	Transport Knots and expressways	N/E		8		
7	Road Conditions and Traffic Safety	N/E		6		
8	Designing of Highways at Difficult Terrain	N/E	10			
9	Road construction technology and management of the difficult natural conditions	N/E		6		
10	Road Rehabilitation and Modernization	Road construction technology and management of the difficult natural conditions			6	
11	Landslide activiti on motor roads	N/E	6			
12	Surface of Road end Aerodromes	Designing of Highways at DifficultTerrain			8	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 15

Nº	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	Construction of Gas Supply Networks, Rehabilitation and Reconstruction	Gas pipelines and Gas Storages			10	
5	Gas Chemistry, Gas Combustion, Combustion Kinetics	N/E	8			
6	Gas Heating, Hot Water Preparing and Alternative Sources.	Gas pipelines and Gas Storages			10	
7	Vehicle Gas filling stations	N/E	5			
8	Gas pipelines and Gas Storages	N/E		6		
9	Special Course of Aerodynamics and Ventilation.	N/E	7			
10	Special Course of Engineering Thermodynamics	N/E		7		
11	Dimensional and Regulatory Equipment Using in Gas Facitities	N/E		7		
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Program Study Load 16

Nº		Precondition of admit	ECTS Credits	
			I Year	II Year

	Course Title		Semester			
			I	II	III	IV
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	N/E	5			
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	N/E		5		
3	Preparation and implementation of the invest projects in to the building	N/E	5			
4	The Theorits of Plasticity and creep	N/E	10			
5	Discrete Methods of Construction Mechanics	N/E			5	
6	Mechanics of the Flat and Spatial Systems	N/E		10		
7	The Theory of Structures	The Theorits of Plasticity and creep		10		
8	Elasticity Theory	N/E	10			
9	Mechanics of Rupture	N/E			5	
10	Mechanics of absolutely rigid body	N/E			5	
11	Construction Special Constructions	N/E			5	
<b>Per semester</b>			<b>30</b>	<b>25</b>	<b>20</b>	
<b>Total:</b>			<b>75</b>			
<b>Research Component:</b>						
	Master Research Project / Prospectus	N/E		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	Theoretical / experimental research / colloquium				30
<b>Total per semester:</b>			<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
<b>Total per year:</b>			<b>60</b>		<b>60</b>	
<b>Total:</b>			<b>120</b>			

### Map of learning outcomes 1



Nº	Course Title	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	communication skill	ability to learn	Values
1	1.1 Business Communication ( English) 1.2 Business Communication ( French) 1.3 Business Communication (German) 1.4 Business Communication (Russian)	X	X		X	X	X
2	2.1 Theory and Practice of Specialized Translation (English) 2.2 Theory and Practice of Specialized Translation (Franch) 2.3 Theory and Practice of Specialized Translation (German) 2.4 Theory and Practice of specialized Translation (Russian)	X X X X	X X X X	X X X X	X X X X		X
3	Preparation and implementation of the invest projects in to the building		X		X		
4	Composite structures in construction	X	X	X	X	X	
5	Building technical Expertise	X	X	X	X		
6	Theoretical studies of prestressed teroo-concrete struqtures	X	X	X	X	X	
7	Mechanics of the Thin-walled Spatial Systems	X	X	X	X		
8	Strengthening Basic Foundations	X	X	X	X		
9	Special wood and plastic constructions	X	X	X	X	X	
10	The building - building modern methods of calculation	X	X		X		X
11	Transforming (space, ground) structures and facilities	X	X	X	X		
12							
13	Metal structure	X	X	X	X		
14	Reinforced concrete structures	X	X		X		
15	Reconstruction of building-masked frames of building-structures	X	X	X	X		
16	Management, design and security in emergency situations	X	X	X	X	X	X
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>2</b>							
1	Soil Mechanics	X	X	X	X	X	
2	Foundation Engineering	X	X	X	X	X	
3	Computer Programs for Designing Buildings	X	X	X	X		
4	Strengthening Basic Foundations	X	X	X	X		
5	Reconstruction of building-masked frames of building-	X	X	X	X		

	structures						
6	City Engineering Structure	X	X	X	X		
7	Depreciation of buildings	X	X	X	X		
8	Geotechnical engineering	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>3</b>							
1	Software Package of Mathematical Models of Computational Processes	X	X	X	X		
2	Construction Economics	X	X	X			
3	Building Materiology	X	X	X		X	
4	Technologies of construction	X	X		X		
5	Construction Special Constructions	X	X	X	X	X	X
6	Construction legislation and normative documentation on construction	X	X	X			
7	Building buildings, diagnostics, reconstruction, modernization	X	X	X	X		
8	Technology of building special facilities	X	X	X			
9	Viable technological solutions of building processes and buildings	X	X	X			
10	Monolithic building-building technology	X	X	X			
11	Energysaving technologies in construction	X	X	X			
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>4</b>							
1	Numerical Methods of Solving Construction Tasks	X	X	X	X		
2	Structured Programming with C++ Language	X	X	X	X	X	
3	Application of The optimization methods in construction	X	X	X	X		
4	Construction Special Constructions	X	X	X	X	X	X
5	Application of the finite elements method in construction	X	X	X			
6	Control of date Bases Visual FoxPro	X	X	X	X	X	
7	Computer Programs for Designing Buildings	X	X	X	X		
8	Software Package of Mathematical Models of Computational Processes	X	X	X	X		
9	Reconstruction of building-masked frames of building-structures	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X

5							
1	Theory and Methodology for Computation of Water Supply and Distribution and Computer Provision	X	X		X		
2	Designing water supply and sewerage systems for residential and industrial facilities	X		X	X	X	
3	Water Supply and Wastewater Pumping Saddles Design	X	X	X		X	
4							
5	Design of Wastewater Treatment Structures	X	X	X			
6	Rational use, monitoring and protection of water resources	X	X		X		
7							
Research Component:							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
6							
1	Engineering Hydroecology	X	X	X			X
2	Flood Risk Management	X	X	X			
3	The use of statistical methods and stochastic models in the design and operation of hydroelectric power stations.	X	X	X	X		
4	Economic justification for the construction of Hydroelectric power plants	X	X	X	X		
5	Financing methods of investment projects in hydro energy	X	X	X	X		
6	Production of Hydraulic Construction Using Modern Technologies	X	X	X	X		
7	Projecting of hydroelectric power plants and Modes of operation	X	X	X	X		
8	Organization of construction of Hydroelectric power plants	X	X	X	X		
Research Component:							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
7							
1	Engineering Hydroecology	X	X	X			X
2	Flood Risk Management	X	X	X			
3	Strength and Seismicity Resistance of Hydraulic of Structures	X	X	X			
4	Strength and Seismicity Resistance of Hydraulic of Structures	X	X	X			
5	Hydraulics of Structures	X	X	X			
6	Design and construction of Hydraulic Structures	X	X	X			
7	Production of Hydraulic Construction Using Modern Technologies	X	X	X	X		
Research Component:							

	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>8</b>							
1	Engineering Hydroecology	X	X	X			X
2	Natural disasters and engineering measures to ensure safety	X	X	X	X		
3	Computer programming in marine construction	X	X	X	X		
4	Seaports and Constructions of the Continental Shelf	X	X	X		X	
5	Calculation methods of wave movements in coastal areas	X	X	X		X	
6	Shipping roads and ports	X	X	X	X		
7	Organization and production of marine hydraulic structures.	X	X	X	X		
8	Economic foundation of sea port construction	X	X	X			
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>9</b>							
1	Risk Investment Project Risks and Environmental and Social Impact Assessment	X	X	X			X
2	System approach for choosing the location of artificial structures	X		X		X	
3	Urban underground structures and subways	X	X	X	X	X	
4	Mechanics of underground structures and design of transport tunnels in seismic zones	X	X	X		X	
5	Restoration and reconstruction of transport tunnels	X	X	X	X	X	X
6	Calculation of road artificial structures and seismic resistant bridges	X	X	X		X	
7	Reinforced concrete large span bridges	X	X	X	X	X	
8	Large span steel bridges	X	X	X	X	X	
9	Modern methods of construction thebig-spanbridges and their survey-testing	X	X	X	X	X	
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>10</b>							
1	System approach for choosing the location of artificial structures	X		X		X	
2	Risk Investment Project Risks and Environmental and Social Impact Assessment	X	X	X			X
3	Calculation the Railroad Track for strength and stability	X	X	X	X		
4	Interaction Between the Railway and Rolling Stock	X	X	X	X		
5	Expressway and Specialized Railways	X	X	X			
6	Providing of Tran traffic safety in complex condition	X	X	X		X	

7	Modernization and Strengthening of Existing Railways	X	X	X	X	X	
8	Railway construction in difficult conditions	X	X	X	X	X	
9	Track monitoring and assessment of the status of rail faults	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>11</b>							
1	Technical diagnosis	X	X	X	X		
2	Active and Passive Systems for Protection of Structures	X	X	X	X		
3	Causes, inspections and restoration of building structures	X	X	X	X		
4	Non-infringing Control Methods	X	X	X	X		
5	The Technical Diagnostics of Construction Damage	X	X	X	X		
6	Mechanics of Rupture	X	X	X	X		
7	Building technical expertise	X	X	X	X		
8	Construction Special Constructions	X	X	X	X	X	X
9	Reconstruction of building-masked frames of building-structures	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>12</b>							
1	Software Package of Mathematical Models of Computational Processes	X	X	X	X		
2	Construction Economics	X	X	X			
3	Monolithic building-building technology	X	X	X			
4	Concrete sciences	X		X		X	
5	Facilities of building materials manufactures	X	X	X			
6	Construction Special Constructions	X	X	X	X	X	X
7	Modern methods of building materials physical and mechanical properties study	X	X	X			X
8	Construction Materials research and control methods	X	X	X			X
9	Building materials substances, fillers and items	X	X	X		X	
10	Design for enterprise of building materials	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>13</b>							
1	Special course of Building Physics	X	X	X	X		
2	Heating	X	X	X	X		
3	Special Course of Aerodynamics and Ventilation.	X	X	X			

4	Air-conditioning and Smooth Supply	X	X	X	X		
5	Special Course of Gas Supply	X	X	X	X		
6	Buildings Energy Efficiency and Energy Saving	X	X	X	X		
7	Buildings Microclimate Automatic Control Systems	X	X	X	X		
8	Non-traditional Renewable Energy Technologies in Civil Engineering	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>14</b>							
1	System approach for choosing the location of artificial structures	X		X		X	
2	Risk Investment Project Risks and Environmental and Social Impact Assessment	X	X	X			X
3	Transport Knots and expressways	X	X	X	X	X	
4	Road Conditions and Traffic Safety	X	X	X	X	X	X
5	Designing of Highways at Difficult Terrain	X	X	X	X	X	X
6	Road construction technology and management of the difficult natural conditions	X	X				X
7	Road Rehabilitation and Modernization	X	X	X		X	
8	Landslide activities on motor roads	X	X	X	X		
9	Surface of Roadend Aerodromes	X	X	X	X		
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>15</b>							
1	Construction of Gas Supply Networks, Rehabilitation and Reconstruction	X	X	X	X		
2	Gas Chemistry, Gas Combustion, Combustion Kinetics	X	X			X	
3	Gas Heating, Hot Water Preparing and Alternative Sources.	X	X	X	X		
4	Vehicle Gas filling stations						
5	Gas pipelines and Gas Storages						
6	Special Course of Aerodynamics and Ventilation.	X	X	X			
7	Special Course of Engineering Thermodynamics	X	X	X	X		
8	Dimensional and Regulatory Equipment Using in Gas Facilities	X	X	X			
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X
<b>16</b>							

1	The Theorits of Plasticity and creep	X	X	X	X		
2	Discrete Methods of Construction Mechanics	X	X	X			
3	Mechanics of the Flat and Spatial Systems	X	X	X	X		
4	The Theory of Structures	X	X	X	X		
5	Elasticity Theory	X	X	X			
6	Mechanics of Rupture	X	X	X	X		
7	Mechanics of absolutely rigid body	X	X	X		X	
8	Construction Special Constructions	X	X	X	X	X	X
<b>Research Component:</b>							
	Master Research Project / Prospectus	X	X	X	X	X	X
	Theoretical / experimental research / colloquium	X	X	X	X	X	X
	Accomplishment and Defense of Master's Thesis	X	X	X	X	X	X

## Program curriculum

№	Course code	Course Title	ESTS credits / hours	Hours									
				Lecture	Seminar (work in the group)	Practical classes:	Laboratory	Practice	Course paper / project	Mid-semester exam	Final exam	Independent work	
1	LEH12412G1	1.1 Business Communication ( English)	125										
	LEH12212G1	1.2 Business Communication ( French)											
	LEH12612G1	1.3 Business Communication (German)											
	LEH12812G1	1.4 Business Communication (Russian)											
2	LEH12512G1	2.1 Theory and Practice of Specialized Translation (English)	125	15		30				2	2	76	
	LEH12312G1	2.2 Theory and Practice of Specialized Translation (Franch)											
	LEH12712G1	2.3 Theory and Practice of Specialized Translation (German)											
	LEH12912G1	2.4 Theory and Practice of specialized Translation (Russian)											
3	AAC85601G1	Preparation and implementation of the invest projects in to the building	125	15		30				1	1	78	
4	AAC85701G1	Composite structures in construction	125	15		30				1	1	78	
5	AAC85801G1	Building technical Expertise	100	15		15				1	1	68	
6	AAC85901G1	Theoretical studies of prestressed teroo-concrete struqtures	125	15		15			15	1	1	78	
7	AAC86001G1	Mechanics of the Thin-walled Spatial Systems	125	15		30				1	1	78	
8	AAC86101G1	Strengthening Basic Foundations	100	15		15				1	1	68	
9	AAC86201G1	Special wood and plastic constructions	125	15		15			15	1	1	78	
10	AAC85601G1	The building building modern methods of calculation	125	15	30					1	1	78	
11	AAC42901G2	Transforming (space, ground) structures and facilities	100	15		15				1	1	68	
12			100							1	1	68	
13	AAC86301G1	Metal structure	125	15			15		15	1	1	78	
14	AAC86401G1	Reinforced concrete structures	125	15		15			15	1	1	78	
15	AAC85001G1	Reconstruction of building-masked frames of building-structures	125	15		15			15	1	1	78	
16	AAC86501G1	Management, design and security in emergency situations	100	15		15				1	1	68	
<b>2</b>													
1	AAC86601G1	Soil Mechanics	250	30		45				1	1	173	
2	AAC86701G1	Foundation Engineering	250	30		15			30	1	1	173	
3	AAC86801G1	Computer Programs for Designing Buildings	150	30			30			1	1	88	
4	AAC86001G1	Strengthening Basic Foundations	225	30		7,5			30	1	1	155,5	



5	AAC85001G1	Reconstruction of building-masked frames of building-structures	125	15		15			15	1	1	78
6	AAC86901G1	City Engineering Structure	150	30		15			15	1	1	88
7	AAC87001G1	Depreciation of buildings	225	30		15			22,5	1	1	155,5
8	AAC87101G1	Geotechnical engineering	125	15		30				1	1	78
<b>3</b>												
1	AAC87201G1	Software Package of Mathematical Models of Computational Processes	125	15		30				1	1	78
2	AAC87301G1	Construction Economics	125	15	30					1	1	78
3	AAC87401G1	Building Materiology	125	15			30			1	1	78
4	AAC31101G1	Technologies of construction	150	30	30					1	1	88
5	AAC87701G1	Construction Special Constructions	125	15		15			15	1	1	78
6	AAC30901G1	Construction legislation and normative documentation on construction	125	15	30					1	1	78
7	AAC31201G1	Building buildings, diagnostics, reconstruction, modernization	125	15		30				1	1	78
8	AAC31301G1	Technology of building special facilities	125	15	30					1	1	78
9	AAC87501G1	Viable technological solutions of building processes and buildings	175	30		30				1	1	113
10	AAC30801G1	Monolithic building-building technology	175	15	15	30				1	1	113
11	AAC30701G1	Energysaving technologies in construction	125	15	30					1	1	78
<b>4</b>												
1	ICT40201G1	Numerical Methods of Solving Construction Tasks	150	30		30				1	1	88
2	ICT40501G1	Structured Programming with C++ Language	225	15		22,5	30			1	1	155,5
3	ICT40301G1	Application of The optimization methods in construction	225	15		22,5	30			1	1	155,5
4	AAC87701G1	Construction Special Constructions	125	15		15			15	1	1	78
5	ICT40401G1	Application of the finite elements method in construction	225	30		37,5				1	1	155,5
6	ICT20801G1	Control of date Bases Visual FoxPro	150	15		30	15			1	1	88
7	AAC86801G1	Computer Programs for Designing Buildings	150	30		30				1	1	88
8	AAC87201G1	Software Package of Mathematical Models of Computational Processes	150	30		30				1	1	88
9	AAC85001G1	Reconstruction of building-masked frames of building-structures	100	15		15				1	1	68
<b>5</b>												
1	AAC01501G1	Theory and Methodology for Computation of Water Supply and Distribution and Computer Provision	250	15		30			30	1	1	173
2	AAC01601G1	Designing water supply and sewerage systems for residential and industrial facilities	250	30					45	1	1	173
3	AAC40401G2	Water Supply and Wastewater Pumping	225	15		22,5			30	1	1	155,5

		Saddles Design											
4			200							1	1	138	
5	AAC01701G1	Design of Wastewater Treatment Structures	175	15		45				1	1	113	
6	AAC89201G1	Rational use, monitoring and protection of water resources	175	30	30					1	1	113	
7			225							1	1	155,5	
<b>6</b>													
1	AAC88101G1	Engineering Hydroecology	150	30	30					1	1	88	
2	AAC33301G1	Flood Risk Management	150	30		30				1	1	88	
3	AAC88201G1	The use of statistical methods and stochastic models in the design and operation of hydroelectric power stations.	225	30		22,5			15	1	1	155,5	
4	AAC88301G1	Economic justification for the construction of Hydroelectric power plants	200	30		15			22,5	1	1	130	
5	AAC88401G1	Financing methods of investment projects in hydro energy	225	30		22,5			15	1	1	155,5	
6	AAC88501G1	Production of Hydraulic Construction Using Modern Technologies	225	30	15	22,5				1	1	155,5	
7	AAC01401G1	Projecting of hydroelectric power plants and Modes of operation	175	30		15			15	1	1	113	
8	AAC88701G1	Organization of construction of Hydroelectric power plants	150	15		15			30	1	1	88	
<b>7</b>													
1	AAC88101G1	Engineering Hydroecology	150	30	30					1	1	88	
2	AAC33301G1	Flood Risk Management	150	30		30				1	1	88	
3	AAC33501G1	Strength and Seismicity Resistance of Hydraulic of Structures	250	30		30			15	1	1	173	
4	AAC33601G1	Strength and Seismicity Resistance of Hydraulic of Structures	250	30		30			15	1	1	173	
5	AAC33701G1	Hydraulics of Structures	225	30		30				1	1	155,5	
6	AAC88801G1	Design and construction of Hydraulic Structures	250	30		30			15	1	1	173	
7	AAC88501G1	Production of Hydraulic Construction Using Modern Technologies	225	30	15	22,5				1	1	155,5	
<b>8</b>													
1	AAC88101G1	Engineering Hydroecology	150	30	30					1	1	88	
2	AAC88901G1	Natural disasters and engineering measures to ensure safety	125	30		15				1	1	78	
3	ICT19501G1	Computer programming in marine construction	225	30		37,5				1	1	155,5	
4	AAC33801G1	Seaports and Constructions of the Continental Shelf	250	30		15			30	1	1	173	
5	AAC33901G1	Calculation methods of wave movements in coastal areas	250	30		30			15	1	1	173	
6	AAC89001G1	Shipping roads and ports	150	30		15			15	1	1	88	
7	AAC34001G1	Organization and production of marine	225	30		22,5			15	1	1	155,5	

		hydraulic structures.											
8	AAC34101G1	Economic foundation of sea port construction.	125	15		30					1	1	78
<b>9</b>													
1	AAC43501G1	Risk Investment Project Risks and Environmental and Social Impact Assessment	150	30	30						1	1	88
2	AAC45101G1	System approach for choosing the location of artificial structures	100	30							1	1	68
3	AAC45401G1	Urban underground structures and subways	200	15		22,5			30		1	1	130,5
4	AAC44901G1	Mechanics of underground structures and design of transport tunnels in seismic zones	175	30		30					1	1	113
5	AAC45001G1	Restoration and reconstruction of transport tunnels	225	30		15			22,5		1	1	155,5
6	AAC90701G1	Calculation of road artificial structures and seismic resistant bridges	125	30		15					1	1	78
7	AAC45201G1	Reinforced concrete large span bridges	175	30		15			15		1	1	113
8	AAC44801G1	Large span steel bridges	175	30		15			15		1	1	113
9	AAC45301G1	Modern methods of construction thebig-spanbridges and their survey-testing	175	30					30		1	1	113
<b>10</b>													
1	AAC45101G1	System approach for choosing the location of artificial structures	100	30							1	1	68
2	AAC43501G1	Risk Investment Project Risks and Environmental and Social Impact Assessment	150	30	30						1	1	88
3	AAC43901G1	Calculation the Railroad Track for strength and stability	250	30		30			15		1	1	173
4	AAC43401G1	Interaction Between the Railway and Rolling Stock	150	30		30					1	1	88
5	AAC43301G1	Expressway and Specialized Railways	200	15	22,5	30					1	1	130,5
6	AAC43801G1	Providing of Tran traffic safety in complex condition	150	30		30					1	1	88
7	AAC44001G1	Modernization and Strengthening of Existing Railways	150	30		30					1	1	88
8	AAC43701G1	Railway construction in difficult conditions	150	30		30					1	1	88
9	AAC43601G1	Track monitoring and assessment of the status of rail faults	200	30		37,5					1	1	130,5
<b>11</b>													
1	AAC84201G1	Technical diagnosis	125	15		30					1	1	78
2	AAC84301G1	Active and Passive Systems for Protection of Structures	125	15		30					1	1	78
3	AAC84401G1	Causes, inspections and restoration of building structures	175	30		30					1	1	113
4	AAC84501G1	Non-infringing Control Methods	225	45		22,5					1	1	155,5

5	AAC84601G1	The Technikal Diagnostics of Construcion Damige	225	30		22,5	15			1	1	155,5
6	AAC84701G1	Mechanics of Rupture	125	15		30				1	1	78
7	AAC84801G1	Building technical expsertize	250	30		30			15	1	1	173
8	AAC84901G1	Construction Special Constructions	125	15		15			15	1	1	78
9	AAC85001G1	Reconstruction of building-masked frames of building-structures	125	15		15			15	1	1	78
<b>12</b>												
1	AAC87201G1	Software Package of Mathematical Models of Computational Processes	125	15		30				1	1	78
2	AAC87301G1	Construction Economics	125	15	30					1	1	78
3	AAC30801G1	Monolithic building-building technology	175	15	15	30				1	1	113
4	EET80301G1	Concrete sciences	225	30		37,5				1	1	155,5
5	EET80401G1	Facilities of building materials manufactures	125	30		15				1	1	78
6	AAC87701G1	Construction Special Constructions	125	15		15			15	1	1	78
7	AAC87801G1	Moderm methods of building materials physical and mechanical properties study	125	15	15		15			1	1	78
8	AAC88001G1	Construction Materials research and control methods	125	15	15		15			1	1	78
9	EET80501G1	Building materials substances, fillers and items	225	30			37,5			1	1	155,5
10	EET80601G1	Desingn for enterprise of building materials	125	30					15	1	1	78
<b>13</b>												
1	AAC89301G1	Special courseof Building Physics	250	45		30				1	1	173
2	AAC01801G1	Heating	150	30		30				1	1	88
3	AAC89401G1	Special Course of Aerodynamics and Ventilation.	150	30		30				1	1	88
4	AAC89501G1	Air-conditioning and Smooth Supply	150	30		30				1	1	88
5	AAC01901G1	Special Course of Gas Supply	250	30		30			15	1	1	173
6	AAC02001G1	Buildings Energy Efficiency and Energy Saving	250	30		45				1	1	173
7	AAC02101G1	Buildings Microclimate Automatic Control Systems	150	30		30				1	1	88
8	AAC89601G1	Non-traditional Renewable Energy Technologies inCivil Engineering	150	30		30				1	1	88
<b>14</b>												
1	AAC45101G1	System approach for choosing the location of artificial structures	100	30						1	1	68
2	AAC43501G1	Risk Investment Project Risks and Environmental and Social Impact Assessment	150	30	30					1	1	88
3	AAC44501G1	Transport Knots and expressways	200	30		37,5				1	1	130,5
4	AAC44701G1	Road Conditions and Traffic Safety	150	30		15			15	1	1	88
5	AAC44301G1	Designing of Highways at DifficultTerrain	250	30		30			15	1	1	173

6	AAC44401G1	Road construction technology and management of the difficult natural conditions	150	30	30			1	1	88
7	AAC44601G1	Road Rehabilitation and Modernization	150	30	30			1	1	88
8	AAC44201G1	Landslide activities on motor roads	150	30	30			1	1	88
9	AAC44101G1	Surface of Road and Aerodromes	200	30	22,5		15	1	1	130,5
<b>15</b>										
1	AAC89101G1	Construction of Gas Supply Networks, Rehabilitation and Reconstruction	250	30	30		15	1	1	173
2	AAC89701G1	Gas Chemistry, Gas Combustion, Combustion Kinetics	225	30	22,5	15		1	1	155,5
3	AAC89801G1	Gas Heating, Hot Water Preparing and Alternative Sources.	250	45	30			1	1	173
4		Vehicle Gas filling stations	125					1	1	78
5		Gas pipelines and Gas Storages	125					1	1	78
6	AAC89401G1	Special Course of Aerodynamics and Ventilation.	175	30	30			1	1	113
7	AAC02201G1	Special Course of Engineering Thermodynamics	175	30	30			1	1	113
8	AAC89901G1	Dimensional and Regulatory Equipment Using in Gas Facilities	175	30	30			1	1	113
<b>16</b>										
1	EET72601G1	The Theorits of Plasticity and creep	250	30	30		15	1	1	173
2	AAC85101G1	Discrete Methods of Construction Mechanics	125	15	15		15	1	1	78
3	AAC85201G1	Mechanics of the Flat and Spatial Systems	250	30	30		15	1	1	78
4	AAC85301G1	The Theory of Structures	250	30	30		15	1	1	173
5	EET72301G1	Elasticity Theory	250	30	30		15	1	1	173
6	AAC84701G1	Mechanics of Rupture	125	15	30			1	1	78
7	MAS36001G1	Mechanics of absolutely rigid body	125	15	30			1	1	78
8	AAC85501G1	Construction Special Constructions	125	15	15		15	1	1	78

Program Supervisor

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Head of Quality Assurance Service

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Dean of the Faculty

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**Agreed with**  
Quality Assurance Service of GTU

Irma inashvili

**Modified**  
Faculty of Civil Engineering  
At the meeting of Faculty Board

