



საქართველოს ტექნიკური უნივერსიტეტი
GEORGIAN TECHNICAL UNIVERSITY

Is approved by the Resolution
#733 of GTU Academic
Council in July 6, 2012
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Master's Educational Program

Name of the program

Safety engineering and Risk Assessment

Faculty

Mining and Geology Faculty

Program Supervisor

Professor Nino Jvarelia

Qualification to award

Master of Environment Engineering and Safety
In case of implementation of no less than 120 credits of the educational program

The language of teaching

Georgian

Precondition for admission to the program

. The Master of Mathematics has the right to have at least a Bachelor or equivalent degree with a person who is enrolled at the basis of the results of the Master's Examinations (Exams / Tests defined by Graduate Examination and GT). Examination issues / tests will be posted on the website of the GT Teaching Department at least one month before the commencement of the exams. [Http: /www.gtu.ge/study/index.php](http://www.gtu.ge/study/index.php) Enrollment on the program without passing the Master's Exams can be made by the Ministry of Education and Science of Georgia

Description of the program

.The program is drawn up by ECTS system, 1 credit is equal to 25 hours, which involves both contact and independent working hours. The credit distribution is presented in the curriculum.The program lasts 2 years (4 semesters) and includes 120 credits.

Each semester is a two-semester of 40 weeks (20 weeks in the first semester, 20 weeks in the second semester) and is as follows: 15 weeks study process, VIII week is for mid-semester assessment. XVII Week Documentary Delivery Final and additional exams are conducted from XVIII to XX. (The additional exam can be conducted after five days from the final examination and only if the student can not get 51 points, but at the same time it is necessary to have 41 points to be able to pass the test.

From the first 60 years I have been awarded 5 credits in Business Communication (English, German, French, Russian), 5 credits to Labor Resource Management, 20 credits for specialty subjects.

In the second semester 5 credits are provided for Technical translation theory and practice (English, German, French, Russian), 5 credits for Master Research Project (Prospectus), 20 credits for specialty subjects.

Out of 60 credits from the second year of the III semester, 20 credits are awarded with specialty subjects, 10 credits for theoretical / experimental research / colloquium.

The 30 semesters of the IV semester are fully devoted to completion and protection of the Master's thesis

The purpose of the program

Master's program is to prepare a specialist with wide and enhanced knowledge required for organizational-normative and industrial-technological activities characteristic of market engineering and risk assessment. Program provides students with the fundamental knowledge of process safety, the device- equipment for safe operation methods, which will be able to fully identify and evaluate manufacturing processes due to the specifics of the potential risks, their values, human exposure levels to implement the actions of natural, man-made character Emergency prevent it, to solve problems and work out organizational work of restoration-specific plan of liquidation activities.

Learning Outcomes and Competences (General and Sectoral)

Knowledge and Knowledge - Multi-facet, specialized theoretical and practical knowledge of security engineering and risk evaluation, knowledge of the ways of solving problems; Knowledge of factors and risks associated with risks, knowledge and awareness of the initial data for industrial trauma and professional diseases, the provision of conditions for emergencies, natural, man-made and social situations; Technological processes, knowledge and techniques of safe and effective exploitation of equipment and equipment, technical and organizational issues of life security and understanding of normative materials.

Ability to use knowledge in practice - based on multilateral and specialized theoretical and practical knowledge will be able to identify potential assessments, assessment and concrete measures for preventing industrial objects; Detection and control of harmful and dangerous factors in enterprises; Conducting liquidation-restoration works of natural, man-made and social emergencies; Organizing the evacuation measures for population transportation, medical equipment, food, water and primary purpose items; Safe operation of computer technologies, new ventilation, illumination systems and equipment, safety equipment, fire and explosives, equipment.

The ability to conclude is to be able to solve the problems arising in changing and emergent industries and emergencies, the use of known sources, the dissemination of modern information, analyzing new data and situations for solving problems and their fundamental reasoning conclusions

Communication skills - to provide information on the problems of occupational and enterprise related issues and the ways in which their solution is transmitted to specialists and non-specialists in both native and foreign languages chosen; Ability to use information technology resources for achieving work goals; Ability to work on writing and information on professional issues.

Learning skills - Determination of learning direction by taking into consideration the environment and priorities of creation; Gradual and multilateral assessment of their learning process to enhance knowledge and experience; Continuation of further studies in the field of safety engineering and professional risk assessment. Values - knowledge, evaluation and sharing of professional liability, values, human values in the field of security engineering and professional risk assessment; Defending the norms of ethics and morals; To work in the

production of life and environment for the safety, protection and striving for their improvement.

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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): (Discussion, debate, presentation, group work, etc.)

Appropriate activities of teaching and learning methods One particular issue cannot be studied in the teaching process only with one method and one activity. The teacher has to use different methods and activities 2 during the teaching process, and in most cases the activities are merged. The activities in the teaching process complement each other. We offer you the most common activities and their definitions. The teacher will select the required activity from the specific goal and objective.

1. **Discussion / debate** are one of the most common activities of interactive teaching. Discussion process increases the quality and activity of students' engagement. Discussion can be turned into arguments and this process is not limited to the questions asked by the teacher. It develops the ability of the student to reason and justify their opinion.

2. **Cooperative learning** is a learning strategy when each member of the group is obliged not only to examine himself but also to help his/her team-mate to study the subject better. Each member of the group works on the problem, until all of them master the issue.

3. **Collaborative work** – By using this activity, teaching implies division of the students' group and assignment of teaching tasks to them. The group members individually work on the issue and in parallel share their opinions with other members of the group. Due to the set objective, it is possible to divide the functions among the members during the group's working process. This strategy provides all students maximum engagement in the learning process.

4. **Verbal or orally transmitted.** Narration, talking and so forth belong to this activity. In this process the teacher orally transmits and explains study material and the students actively perceive and learn it through listening, remembering and thinking.

5. **Project planning and presentation.** When working on the project, the student uses the acquired knowledge and skills to solve the real problem. This increases students' motivation and responsibility. Working on the project includes planning, surveying, practical activity and the performance of the results in accordance with the selected issue. The project will be deemed implemented if its results are presented in a clear and convincing way. It can be performed individually, in couples or in groups; also within a subject or within a few subjects (integration of the subjects); after completion, the project can be presented to a big audience

6. **Case study** - The teacher discusses concrete cases with students and they will study and analyze everything in a thorough manner. For example, in the field of engineering security it can be a specific case of accident or disaster in policy science - concrete.

7. **The explanatory method** is based on a discussion on the issue. The teacher gives the case a concrete example, which will be discussed in detail within the topic

8. **Practical methods** combine all forms of learning that form students' practical skills. In this case, the student can independently perform some of the activities, such as production and pedagogical practice, field work, etc.

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.

Field of employment

Master may be employed in a state or private enterprise and institution; Governmental structures, advisory firms and agencies, international organizations, energy companies, agricultural products processing enterprises; Natural gas supply systems; Thermal energy systems operating and service center centers; In the gas compressor stations; Natural gas, oil and oil products in the pipeline and their pump and compressor stations; Metallurgy, Communication, Telecommunication, Informatics and Management Systems, Construction, Hydroelectric Enterprises and Objectives, Emergency Situations Management Departments, Mechanical Engineering, Light Industry, Transport, Mining, Geological, Chemical and Food Technology, Metallurgy, Communications, , Research organizations, universities, scientific research For institutions.

Opportunity to continue learning

Doctoral Educational Programs

Number of attached syllables:23

Program Study Load

№	Course Title	Precondition of admit	ECTS Credits			
			I Year		II Year	
			Semester			
			I	II	III	IV
1	Business Communication (English)	does not have	5			
2	Business Communication (German)	does not have	5			
3	Business Communication(French)	does not have	5			
4	Business Communication (Russian)	does not have	5			
5	Human Resources Management	does not have	5			
6	Labour and Emergency legislation	does not have	4			
7	Industrial hygiene safety environment	does not have	4			

8	Safety operation of electrical installations	does not have	5			
9	Safety precautions	does not have	4			
10	Earthquakes, Landscapes Fires and their Liquidation	Labour and Emergency legislation		4		
11	Technical translation theory and practice(English)	does not have		5		
12	Technical translation theory and practice (German)	does not have		5		
13	Technical translation theory and practice(French)	does not have		5		
14	Technical translation theory and practice (Russian)	does not have		5		
15	Sanitary safety of the production environment	does not have		5		
16	Employment Injuries and Occupational Diseases	Industrial hygiene safety environment		5		
17	Fire Safety of Technological Processes	Safety precautions		5		
18	Explosion safety of technological processes	Safety precautions		4		
19	Safete of restoration works of the buildings	does not have			4	
20	Engineering Psychology of Safety	does not have			4	
21	Radiation Safety	does not have			4	
22	Extreme conditions and primary assistance	does not have			4	
23	Technological emergencies	does not have			4	
Per semester			27	28	20	
Total:				75		
Research Component:						
	Master Research Project / Prospectus	does not have		5		
	Theoretical / experimental research / colloquium	Master Research Project / Prospectus			10	
	Accomplishment and Defense of Master's Thesis	All the necessary training and research components				30
Total per semester:			30	30	30	30
Total per year:			60		60	
Total:				120		

Map of learning outcomes

Nº	Course Title	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	communication skill	ability to learn	Values
1	Business Communication (English)	X	X		X	X	X
2	Business Communication (German)	X	X		X	X	X
3	Business Communication (French)	X	X		X	X	X
4	Business Communication (Russian)	X	X		X	X	X
5	Human Resources Management	X	X	X			
6	Labour and Emergency legislation	X	X	X	X		X
7	Industrial hygiene safety environment	X		X	X	X	X
8	Industrial hygiene safety environment	X	X	X			
9	Safety precautions	X	X	X			
10	Earthquakes, Landscapes Fires and their Liquidation	X	X	X		X	
11	Technical translation theory and practice(English)	X	X	X	X		
12	(Technical translation theory and practice (German)	X	X	X	X		X
13	Technical translation theory and practice (French)	X	X	X	X		
14	Technical translation theory and practice (Russian)	X	X	X	X		
15	Sanitary safety of the production environment	X	X	X	X		X
16	Employment Injuries and Occupational Diseases	X		X			X
17	Fire Safety of Technological Processes		X	X		X	
18	Explosion safety of technological processes	X	X	X	X		X
19	Safete of restoration works of the buildings	X	X	X			
20	Engineering Psychology of Safety	X	X	X			
21	Radiation Safety	X	X	X		X	
22	Extreme conditions and primary assistance	X		X	X	X	X
23	Technological emergencies	X		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

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	Business Communication (English)	5/125			45				2	2	76
2	LEH12612G1	Business Communication (German)	5/125			45				2	2	76
3	LEH12212G1	Business Communication (French)	5/125			45				2	2	76
4	LEH12812G1	Business Communication (Russian)	5/125			45				2	2	76
5	BUA72503G1	Human Resources Management	5/125	15	30					1	1	78
6	HHS25603G1	Labour and Emergency legislation	4/100	15	15					1	1	68
7	HHS24003G1	Industrial hygiene safety environment	4/100	15					15	1	1	68
8	HHS21303G1	Industrial hygiene safety environment	5/125	15	15				15	1	1	78
9	HHS26403G1	Safety precautions	4/100	15		15				1	1	68
10	HHS21603G1	Earthquakes, Landscapes Fires and their Liquidation	4/100	15	15					1	1	68
11	LEH12512G1	Technical translation theory and practice (English)	5/125	15		30				2	2	76
12	LEH12712G1	Technical translation theory and practice (German)	5/125	15		30				2	2	76
13	LEH12312G1	Technical translation theory and practice (French)	5/125	15		30				2	2	76
14	LEH12912G1	Technical translation theory and practice (Russian)	5/125	15		30				2	2	76
15	HHS25003G1	Sanitary safety of the production environment	5/125	15		15			15	1	1	78
16	HHS22003G1	Employment Injuries and Occupational Diseases	5/125	15	15				15	1	1	78
17	HHS22303G1	Fire Safety of Technological Processes	5/125	15	15				15	1	1	78
18	HHS24903G1	Explosion safety of	4/100	15					15	1	1	68

		technological processes										
19	HHS26603G1	Safete of restoration works of the buildings	4/100	15	15					1	1	68
20	HHS25903G1	Engineering Psychology of Safety	4/100	15	15					1	1	68
21	HHS26603G1	Radiation Safety	4/100	15					15	1	1	68
22	HHS24103G1	Extreme conditions and primary assistance	4/100	15	15					1	1	68
23	HHS24203G1	Technological emergencies	4/100	15					15	1	1	68

Program Supervisor

Nino Jvarelia

Mining and Geology

Shalva Keleptrishvil

Head of Quality Assurance Service

Dean of the Faculty

Anzor Abshilava

Agreed with

Quality Assurance Service of GTU

Irma Inashvili

Modified

Mining and Geology

At the meeting of Faculty Board

30.03 2018

Chairman of the Faculty Board

Anzor Abshilava