



საქართველოს ტექნიკური უნივერსიტეტი
GEORGIAN TECHNICAL UNIVERSITY

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Bachelor's Educational Program

Name of the program

Engineering Geodesy

Faculty

Mining and Geology

Program manager

Associate Professor, Giorgi Chiaureli

Qualification and program credits

(Bachelor in Geoinformatic and Engineering Geodesy)
She/he will be given 210 credits of the existing basic specialty with a combination of 30 credits of free components, that should be no less than 240 credits in the educational program

The language of teaching

Georgian

Precondition for admission to the program

The right to study at a Bachelor Degree has only a holder of the General State Education Diploma or the document equal to it, who is enlisted in accordance with the Georgian legislation.

Description of the program

The duration of the program is 4 years (8 semesters) and includes 240 credits, where 210 credits are the basic specialty and 30-free components. Based on ECTS system 1 credit is 25 hours.

Every academic year includes 60 credits. Each academic year continues for 40 weeks, where I semester - 20 weeks and II semester - 20 weeks.

Every semester study takes place within 15 weeks. The interim assessment includes current activities and mid-examination exams. Maximum score of current activity is 30, minimum score is 15 points.

Maximum score of mid-semester exam is 30 and minimum score is 7.5 points. XVII week - entering documentation. The final exam is in XVIII-XIX-semesters, the maximum score of each is 40, the minimum score is 10.

If the student fails to pass the final exam, the score is 41-50 points means that the student needs more work

to pass, and he / she is allowed to pass the exam once more with independent work. The additional examination shall be appointed at least 5 days after the final test results are declared in the final examination schedule.

The first academic year includes - 60 credits, where 17 credits are devoted to specialty subjects: engineering geodesy 1-2 credits, engineering geodesy 2-6credits, introduction to geoinformation systems – 4 credits, and introduction to digital photogrammetry, each 4 credits. The other 43 credits are dedicated to general subjects. Mathematics is taught in two semesters (5-5 credits), foreign language is taught in two semesters (3-3 credits), general physicsA, B - two semesters (4-4 credits). general chemistry - one semester (4 credits), Computer graphics subject has 3 credits and elective humanitarian subjects - 3 credits and general geology – in second semester (5 credits).

The second academic year includes - 60 credits, where 44 credits are dedicated to the specialty; the rest of 16 credits are covered by general subjects: of analytical geometry, fundamentals of work safety in geodesy enterprises, industry economy and management, fundamentals of geomorphology and environmental protection and ecology.

The third year includes - 60 credits, where 45 credits are dedicated to the subject of specialty. From the rest of 15 credits 10credits are dedicated to the free components, and, 5 credits – to the general subjects.

The last year includes - 60 credits, where 20 credits are free components, 10 credits for bachelor's work and 5 credit - practices, the rest 25 credits are for specialty elective subjects, which is divided into five optional groups, and, the student chooses one subject from each group.

The purpose of the program

The aim of this program is to prepare a bachelor who will be able to work in the engineering-related activities at various stages of engineering constructions. For instance, she or he will be able the study of engineering objects, to design of the geometric parameters and study the deformations using geodesy. In addition, she or he will be able to assessing the design and accuracy of the networks. As well, the theoretical and practical knowledge in the geo information systems and remote sensing technologies will be acquired in this educational program.

Outcomes/competences (general and sectoral)

Knowledge and understanding:

- Knowledge of fundamentals of the work safety;
- knowledge of fundamentals for performing of geodesic and mine surveying works;
- Obtaining a modern systematic knowledge of the geodetic and mine surveying works;
- Obtaining the relevant theoretical knowledge in educational program on the fundamental and special questions of engineering geodesy;
- Knowledge of fundamentals in both geoinformation systems and remote sensing technologies ;

The ability to use knowledge in practice:

- Thickening of points of geodetic net and works of mapping Allocation the project to the area; Observing deformations of the built constructions by using geodetic equipment's; Performing cadastral works, real estate surveying, recording and registration and issuance;
- Provision of mine surveying in mining in case of the investigation, design, construction, exploitation and liquidation of mineral deposits;
- Performing the main geodetic tasks on the construction site (field works, transfer benchmark from the surface to the storey's and underground, levelling the construction area). Underground orientation (horizontal and vertical surveying), underground traversing and levelling.
- Skill to use Geoinformation Technologies, including the desk and server software systems

Making judgments:

Formulating substantiated conclusions based on a new and established data, to solve engineering geodesic problems.

- Ability to develop new information.

Communicating skills:

- The ability to write in a succinct and understandable manner;
- Ability to create logically proved written structures;
- Ability to prepare relevant presentations or written information;
- Skills of writing formulation of complex issues;
- Ability to communicate in native and foreign languages;
- Ability to verbal formulation of complex issues;
- Ability to perform public speech;

ability to learn:

- In order to develop professional knowledge and experience, both to determine own learning directions and continue study in the next education level (master's program).

Values:

- Defense the professional values (accuracy, punctuality, objectivity, transparency, organization, etc.)
- Defense of norms of ethics and morals;
- Understanding geodetic professional values, evaluating relationships with colleagues and sharing the information.

Methods of achieving learning outcomes (teaching and learning)

- Lecture Seminar (team working) Practice Laboratory Practice
 Course paper/project 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.)

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.

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.

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.

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.

Implication - It is quite effective in terms of achieving the result. In many cases, it is better to provide the students with audio and visual materials simultaneously. The study material can be demonstrated by both the teacher and the student. This activity helps us to demonstrate different levels of learning material, to specify what students will have to do independently; at the same time, this strategy visually reflects the essence of the topic/ problem. Demonstration may be simple.

Analysis - helps us to divide the study material into constituent parts. This will simplify the detailed coverage of individual issues within a difficult problem.

Case study - the teacher will discuss concrete cases with the students, and study the issue thoroughly. For example, in the safety of engineering, it can be a case of a particular accident or disaster, in the political science - concrete, for example, the Karabakh problem (Armenia-Azerbaijan conflict) analysis and etc.

The script - implies the following activities: making extracts, records, notes, theses, abstract or essay and other

Practical methods – It combines all teaching forms that sets up interpersonal skills for students. In this case the student is independent from performing some action outcoming from the acquired knowledge.

Explanation - is based on the discussion on the issue. The teacher gives a concrete example from the material, which is discussed in detail within the given topic.

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.

Deduction - is such a form of transmitting any knowledge, which based on general knowledge represents logical process of discovering new knowledge in other words, the process is going from general to concrete.

Action-oriented training - requires active involvement of the teacher and student in the teaching process, where the practical interpretation of theoretical material is of special significance.

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.

Consultations - The student has to be assisted by the teacher to acquire habits of the independent work, to direct the work on the study literature and other sources in a correct manner, and clear up the issues raised during one's own work

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

Mining profile industries: mines, ores, quarries. Organizations engaged in designing and construction of shafts, mines and other underground structures. Ministry of Environmental Protection and Agriculture; Ministries of Defense, Finance, Economy and Sustainable Development; as well as the Ministry of Justice (Public Registry).

Opportunity to continue learning

Master's Educational Programs

Human and material resources necessary for the implementation of the program

The description of human and material resources are in the attached syllables and files.

Number of attached syllabus: 85

Program subject load

№	Subject	Precondition of admit	ECTS Credits															
			I Year		II Year		III Year		IV Year									
			Semester															
			I	II	III	IV	V	VI	VII	VIII								
1	Elements of Linear Algebra and Calculus	Does not have	5															
2	General Physics A	Does not have	4															
3	Engineering geodesy 1	Does not have	3															
4	Computer Technologies	Does not have	4															
5	General Chemistry	Does not have	4															
6	Computer Engineers Graphics	Does not have	3															
7	Foreign language:																	
7.1	English for Technical Specialities 1	Does not have	3															
7.2	Russian for Technical Specialities 1	Does not have																
7.3	French for Technical Specialities 1	Does not have																
7.4	German for Technical Specialities 1	Does not have																
8	Introduction to GIS	Does not have	4															
9	Elements of Mathematical Analysis	Elements of Linear Algebra and Calculus		5														
10	General Physics B	General Physics A		4														
11	Foreign language:																	
11.1	English for Technical Specialities 2	English for Technical Specialities 1		3														
11.2	Russian for Technical Specialities 2	Russian for Technical Specialities 1																
11.3	French for Technical Specialities 2	French for Technical Specialities 1																
11.4	German for Technical Specialities 2	German for Technical Specialities 1																
12	Elective humanitarian:																	
12.1	Academic Writing Elements	Does not have		3														
12.2	The Modern Language of Communications Technologies	Does not have																
12.3	Culture and modernity	Does not have																
12.4	History of Technical design	Does not have																
12.5	History of Georgia	Does not have																
12.6	Introduction to Sociology	Does not have																

12.7	The basics of philosophy	Does not have							
12.8	Introduction to Psychology	Does not have							
13	Engineering geodesy 2	Engineering geodesy 1		6					
14	Introduction to fotogrammetry	Does not have		4					
15	General Geology	Does not have		5					
16	Geoinformation systems	Introduction to GIS		5					
17	Field Economics and Management	Does not have		3					
18	Work safety at work mining enterprises	Does not have		3					
19	Environment rotection and cology 3	Does not have		3					
20	Basic of cartography	Does not have		4					
21	Equipment studies in geodesyA	Engineering geodesy 2		4					
22	Mathematical processing of measurements results A	Does not have		4					
23	Short Course in Analytical Geometry	Does not have		4					
24	Fundamentals of mine surveying	Engineering geodesy 2			3				
25	Mathematical processing of measurements results B	Mathematical processing of measurements results A			5				
26.1	Fundamental of geomorphology	Does not have			3				
26.2	Mining-Industrial Geology	General Geology							
27	Introduction to remote sensing	Does not have			4				
28	GIS cartography	Introduction to GIS			4				
29	Land use planning	Does not have			4				
30	Equipment studies in geodesy B	Equipment studies in geodesy A			7				
31	Land cadastre	Does not have				5			
32	Underground Mines and the Construction of Buildinds Basics	Does not have				5			
33	Modern geodesic systems A	Equipment studies in geodesyB				4			
34	Higher geodesy	Mathematical processing of measurements results B				6			
35	Aerial photography	Introduction to fotogrammetry				5			
36	Mine surveying	Fundamentals of mine surveying					5		
37	Mining geometry 1	Fundamentals of mine surveying					5		
38	General gravimetry	Does not have					4		
39	Appled geodesy 1	Aerial photography, Mathematical processing of measurements results B					4		
40	Modern geodesic systems B	Modern geodesic systems A					7		
41	Group 1 of Elective Subjects								
41.1	Case of mine surveying	Mine surveying						5	
41.2	Appled geodesy 2	Appled geodesy1						5	
41.3	Basics of land law	Does not have						5	
42	Group 2 of Elective Subjects								

42.1	Minerals in Mineral Processing Technology	Does not have								5	
42.2	Building technology	Does not have								5	
42.3	Administration of Land	Does not have								5	
43	Group 3 of Elective Subjects										
43.1	Mining geometry	Mining geometry 1								5	
43.2	Geodetic gravimetry	General gravimetry								5	
43.3	Spatial information systems of land	Does not have								5	
44	Group 4 of Elective Subjects										
44.1	Underground Processing of Minerals	Does not have								5	
44.2	The Basics of City Planning	Does not have								5	
44.3	Urban cadastre	Land cadastre								5	
45	Group 5 of Elective Subjects										
45.1	Mining safety and aerologic	Does not have								5	
45.2	General Engineering Geology	Does not have								5	
45.3	Land (real estate) registration	Land cadastre								5	
46	Bachelors thesis in engineering geodesy	Does not have									10
47	Training practice in geodesy	Does not have									5
	Free components (Each 5 credits)							5	5	5	15
48	1. Mine mechanical equipment (4 credit)	Does not have									
	2. The Technology of Construction of underground Structures	Does not have									
	3. Numismatics and Bonistics	Does not have									
	4. Financial institutions and markets	Does not have									
	5. History of religions	Does not have									
	6. Tourism	Does not have									
	7. Politology	Does not have									
	8. Monuments of World Culture Heritage (6 credit)	Does not have									
	9. Museology (4 credit)	Does not have									
	10. Cultural Heritage and Tourism	Does not have									
	11. Chromatics	Does not have									
	12. Teknospero and ecosystem	Does not have									
	13. All about oil	Does not have									
	14. Democracy and Citienship	Does not have									
per semester			30	30	30	30	30	30	30	30	30
Per year			60	60	60	60	60	60	60	60	60
Total			240								

Map of learning outcomes

№	Subject	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	Communication skill	Ability to learn	Values
1	Elements of Linear Algebra and Calculus	X	X			X	
2	General Physics A	X		X		X	
3	Engineering geodesy 1	X	X	X			
4	Computer Technologies	X	X			X	
5	General Chemistry	X	X		X	X	
6	Computer Engineers Graphics	X	X			X	
7	Foreign language:						
7.1	English for Technical Specialities - 1	X	X		X	X	
7.2	Russian for Technical Specialities - 1	X	X		X	X	
7.3	French for Technical Specialities - 1	X	X		X	X	
7.4	German for Technical Specialities – 1	X	X		X	X	
8	Introduction to GIS	X	X	X			
9	Elements of Mathematical Analysis	X	X			X	
10	General Physics B	X		X		X	
11	Foreign language:						
11.1	English for Technical Specialities - 2	X	X		X	X	
11.2	Russian for Technical Specialities - 2	X	X		X	X	
11.3	French for Technical Specialities - 2	X	X		X	X	
11.4	German for Technical Specialities – 2	X	X		X	X	
12	Elective humanitarian:						
12.1	Academic Writing Elements	X	X		X		
12.2	The Modern Language of Communications Technologies	X	X		X		
12.3	Culture and modernity	X	X				X
12.4	History of Technical design	X		X			X
12.5	History of Georgia	X	X	X	X		
12.6	Introduction to Sociology	X	X	X			X
12.7	The basics of philosophy	X	X				X
12.8	Introduction to Psychology	X	X		X		
13	Engineering geodesy 2	X	X	X			X
14	Introduction to fotogrammetry	X	X	X			
15	General Geology	X	X	X			
16	Geoinformation systems	X	X	X			
17	Field Economics and Management	X	X	X	X		
18	Work safety at work mining enterprises	X	X	X			
19	Environment rotection and cology 3	X	X				X
20	Basic of cartography	X	X	X			
21	Equipment studies in geodesy A	X	X	X			

No	Subject	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	Communication skill	Ability to learn	Values
22	Mathematical processing of measurements results A	X	X	X			
23	Short Course in Analytical Geometry	X	X			X	
24	Fundamentals of mine surveying	X	X				
25	Mathematical processing of measurements results B	X	X	X			
26.1	Fundamental of geomorphology	X	X	X			
26.2	Mining-Industrial Geology	X		X			X
27	Introduction to remote sensing	X	X	X			
28	GIS cartography	X	X	X			
29	Land use planning	X	X	X			
30	Equipment studies in geodesy B	X	X	X			X
31	Land cadastre	X	X	X			
32	Underground Mines and the Construction of Buildings Basics	X			X	X	
33	Modern geodesic systems A	X	X	X			
34	Higher geodesy	X	X	X			
35	Aerial photography	X	X	X			
36	Mine surveying	X	X	X			
37	Mining geometry 1	X	X	X			
38	General gravimetry	X	X	X			
39	Applied geodesy 1	X	X	X			
40	Modern geodesic systems B	X	X	X			X
41	Group 5 of Elective Subjects						
41.1	Case of mine surveying	X	X	X			X
41.2	Applied geodesy 2	X	X	X			
41.3	Basics of land law	X	X	X			
42	Group 5 of Elective Subjects						
42.1	Minerals in Mineral Processing Technology	X	X	X			
42.2	The Basics of City Planning	X		X	X		
42.3	Administration of Land	X	X	X		X	X
43	Group 5 of Elective Subjects						
43.1	Mining geometry	X	X	X			
43.2	Geodetic gravimetry	X	X	X			
43.3	Spatial information systems of land	X	X	X			
44	Group 5 of Elective Subjects						
44.1	Underground Processing of Minerals	X	X	X		X	
44.2	Building technology	X	X	X			
44.3	Urban cadastre	X	X	X			
45	Group 5 of Elective Subjects						

№	Subject	Knowledge and understanding	Ability to use knowledge in practice	Making judgments	Communication skill	Ability to learn	Values
45.1	Mining safety and aerologic	X	X	X			
45.2	General Engineering Geology	X		X		X	
45.3	Land (real estate) registration	X	X	X			
46	Bachelors thesis in engineering geodesy	X	X	X	X	X	
47	Training practice in geodesy	X		X		X	
48	Free components (Each 5 credits)						
48.1	Mine mechanical equipment (4 credits)	X		X		X	
48.2	The Technology of Construction of underground Structures	X			X	X	
48.3	Numismatics and Bonistics	X	X	X	X		
48.4	Financial institutions and markets	X	X	X	X	X	
48.5	History of religions	X	X	X	X	X	X
48.6	Tourism	X	X	X	X	X	X
48.7	Politology	X	X	X	X	X	X
48.8	Monuments of World Culture Heritage (6 credit)	X	X	X		X	
48.9	Museology (4 credit)	X	X	X	X		
48.10	Cultural Heritage and Tourism	X		X			X
48.11	Chromatics	X		X	X		
48.12	Teknosystem and ecosystem	X	X		X	X	X
48.13	All about oil	X			X		X
48.14	Democracy and Citizenship	X	X	X			X

Program curriculum

№	Subject code	Subject	ECTS Credit/Hours	Hours									
				Lecture	Seminar (work in the group)	Practical classes	Laboratory	Practice	Course work/project	Mid-semester exam	Final exam	Independent work	
1	MAS34308G1	Elements of Linear Algebra and Calculus	5/125	15		30					1	2	77
2	PHS51208G1	General Physics A	4/100	15			15				1	2	67
3	PHS41803G1	Engineering geodesy 1	3/75	15			15				1	1	43
4	ICT10303G2	Computer Technologies	4/100	4			26				3	1	66

№	Subject code	Subject	ECTS Credit/Hours	Hours								
				Lecture	Seminar (work in the group)	Practical classes	Laboratory	Practice	Course work/project	Mid-semester exam	Final exam	Independent work
5	PHS16404G1	General Chemistry	4/100	15			15			1	1	68
6	EET70805G1	Computer Engineers Graphics	3/75			30				1	1	43
7		Foreign language:										
7.1	LEH14412G1	English for Technical Specialities - 1	3/75			30				1	1	43
7.2	LEH14612G1	Russian for Technical Specialities - 1	3/75			30				1	1	43
7.3	LEH14812G1	French for Technical Specialities - 1	3/75			30				1	1	43
7.4	LEH15012G1	German for Technical Specialities – 1	3/75			30				1	1	43
8	ICT39603G1	Introduction to GIS	4/100	15		15				1	1	68
9	MAS33308G1	Elements of Mathematical Analysis	5/125	15		30				1	2	77
10	PHS51308G1	General Physics B	4/100	15		15				1	2	67
11		Foreign language:										
11.1	LEH14512G1	English for Technical Specialities - 2	3/75			30				1	1	43
11.2	LEH14712G1	Russian for Technical Specialities - 2	3/75			30				1	1	43
11.3	LEH14912G1	French for Technical Specialities - 2	3/75			30				1	1	43
11.4	LEH15112G1	German for Technical Specialities – 2	3/75			30				1	1	43
12												
12.1	LEH12112G1	Academic Writing Elements	3/75	15	15					1	1	43
12.2	LEH12012G1	The Modern Language of Communications Technologies	3/75	15	15					1	1	43
12.3	SOS40112G1	Culture and modernity	3/75	15	15					1	1	43
12.4	ART20305G1	History of Technical design	3/75	15	15					1	1	43
12.5	HEL20212G1	History of Georgia	3/75	15	15					1	1	43
12.6	SOS40312G1	Introduction to Sociology	3/75	15	15					1	1	43
12.7	HEL30212G1	The basics of philosophy	3/75	15	15					1	1	43
12.8	SOS30312G1	Introduction to Psychology	3/75	15	15					1	1	43
13	PHS41903G1	Engineering geodesy 2	6/150	15			15	40		1	1	78
14	ICT30403G2	Introduction to fotogrammetry	4/100	15		15				1	1	68
15	PHS30703G1	General Geology	5/125	15			30	18		1	1	60
16	ICT39503G1	Geoinformation systems	5/125	15		30				1	2	77
17	BUA72203G1	Field Economics and Management	3/75	15	15					1	2	42
18	HHS22703G1	Work safety at work mining enterprises	3/75	15			15			1	1	43
19	EET20404G1	Environment protection and ecology 3	3/75	15			15			1	1	43
20	PHS41703G1	Basic of cartography	4/100	15			15			1	1	68
21	PHS41203G1	Equipment studies in geodesyA	4/100	15			15			1	1	68
22	PHS42003G1	Mathematical processing of measurements results A	4/100	15		15				1	1	68
23	MAS34408G1	Short Course in Analytical Geometry	4/100	15		15				1	2	67
24	MAP45303G1	Fundamentals of mine surveying	3/75	15			15			1	1	43

№	Subject code	Subject	ECTS Credit/Hours	Hours									
				Lecture	Seminar (work in the group)	Practical classes	Laboratory	Practice	Course work/project	Mid-semester exam	Final exam	Independent work	
25	PHS42103G1	Mathematical processing of measurements results B	5/125	15		30					1	1	78
26	1. PHS30803G1	Fundamental of geomorphology	3/75	15		15					1	1	43
	2. PHS32603G1	Mining-Industrial Geology	3/75	15		15					1	1	43
27	PHS42503G1	Introduction to remote sensing	4/100	15		15					1	1	68
28	ICT39703G1	GIS cartography	4/100	15		15					1	1	68
29	BUA77603G1	Land use planning	4/100	15		15					1	1	68
30	PHS41303G1	Equipment studies in geodesyB	7/175	15			30	40			1	1	88
31	SOS56803G1	Land cadastre	5/125	15		30					1	1	78
32	MAP40603G1	Underground Mines and the Construction of Buildinds Basics	5/125	15		30					1	1	78
33	PHS41503G1	Modern geodesic systems A	4/100	15			15				1	1	68
34	PHS42203G1	Higher geodesy	6/150	30		30					1	1	88
35	PHS42803G1	Aerial photography	5/125	15			30				1	1	78
36	MAP45403G1	Mine surveying	5/125	15		30					1	1	78
37	MAP45103G1	Mining geometry 1	5/125	15		30					1	1	78
38	PHS21903G1	General gravimetry	4/100	15		15					1	1	68
39	PHS42303G1	Appled geodesy 1	4/100	15		15					1	1	68
40	PHS41603G1	Modern geodesic systems B	7/175	15			30	40			1	1	88
41	Group 1 of Elective Subjects												
41.1	MAP45503G1	Case of mine surveying	5/125	9			9	42			1	1	63
41.2	PHS42403G1	Appled geodesy 2	5/125	15		30					1	1	78
41.3	AW11503G2	Basics of land law	5/125	15	30						1	1	78
42	Group 2 of Elective Subjects												
42.1	MAP45003G1	Minerals in Mineral Processing Technology	5/125	15			30				1	1	78
42.2	AAC01201G1	Building technology	5/125	15	30						1	1	78
42.3	MAP45003G1	Administration of Land											
43	Group 3 of Elective Subjects												
43.1	MAP45203G1	Mining geometry	5/125	15		30					1	1	78
43.2	PHS22003G1	Geodetic gravimetry	5/125	15		30					1	1	78
43.3	ICT39903G1	Spatial information systems of land	5/125	15		30					1	1	78
44	Group 4 of Elective Subjects												
44.1	MAP56003G1	Underground Processing ofMinerals	5/125	15		30					1	1	78
44.2	AAC17906G1	The Basics of City Planning	5/125	15	30						1	1	78
44.3	SOS56903G1	Urban cadastre	5/125	15		30					1	1	78
45	Group 5 of Elective Subjects												
45.1	HHS26203G1	Mining safety and aerologic	5/125	30		15					1	1	78
45.2	PHS31003G2	General Engineering Geology	5/125	15		30					1	1	78
45.3	BUA77503G1	Land (real estate) registration	5/125	15		30					1	1	78
46	PHS45003G2	Bachelors thesis in engineering geodesy	10/250						120		1	1	128

№	Subject code	Subject	ECTS Credit/Hours	Hours								
				Lecture	Seminar (work in the group)	Practical classes	Laboratory	Practice	Course work/project	Mid-semester exam	Final exam	Independent work
47	PHS45103G2	Training practice in geodesy	5/125					60		1	1	63
48	Free components (Each 5 credits)											
48.1	MAP42603G2	Mine mechanical equipment (4 credit)	4/100	15		15				1	1	68
48.2	MAP40803G1	The Technology of Construction of underground Structures	5/125	15		30				1	1	78
48.3	BUA22213G1	Numismatics and Bonistics	5/125	15	30					1	1	78
48.4	BUA28113G1	Financial institutions and markets	5/125	15	30					2	2	76
48.5	HEL10112G1	History of religions	5/125	15	30					1	1	78
48.6	PESI0213G1	Tourism	5/125	15	30					2	2	76
48.7	SOS20213G1	Politology	5/125	15	30					2	2	76
48.8	HEL22412G1	Monuments of World Culture Heritage	6/150	30	30					2	2	86
48.9	HEL23112G1	Museology	4/100	15	15					1	1	68
48.10	PES15813G1	Cultural Heritage and Tourism	5/125	15	30					1	1	78
48.11	AAC60106G1	Chromatics	5/125	15				30		1	1	78
48.12	HHS27903G1	Teknospero and ecosystem	5/125	30	15					1	1	78
48.13	MAP41603G2	All about oil	5/125	15	30					1	1	78
48.14	SOS20413G1	Democracy and Citienship	5/125	15	30					2	2	76

Program Principle
Faculty Name

Giorgi Chiaureli

Mining and geology Faculty

Head of Quality Assurance Service

Shalva Keleptrishvili

Dean of the Faculty

Anzor Abshilava

Agreed with

Quality Assurance Service of GTU

Irma Inashvili

Approved by

Mining and geology
At the meeting of Faculty Board
30. 03. Year, Protocol №3

Chairman of the Faculty Board

Anzor Abshilava