განათლების ხარისხის განვითარების ეროვნული ცენტრი
NATIONAL CENTER FOR EDUCATIONAL QUALITY ENHANCEMENT

Accreditation Expert Group Report on Higher Education Programme

Bachelor's education program in Building systems' engineering
Free University of Tbilisi

Date(s) of Evaluation: October 25/2019

Report Submission Date: December 2/2019

Tbilisi
2019

HEI's Information Profile

Name of Institution Indicating its Organizational Legal Form	Free University of Tbilisi Ltd
HEI's Identification Code	211359448
Type of Institution	University

Higher Education Programme Information Profile

Name of the Programme	Bachelor's education program in building systems' engineering
Level of Education	Bachelor's
Qualification Granted Indicating Qualification Code	Bachelor of engineering in construction engineering and management, 0788
Language of Instruction	Georgian
Number of Credits	242
Programme Status (Authorized/ Accredited/New)	new

Expert Panel Members

Chair (Name, Surname, University/organization/Country)	Roode Liias Tallinn University of Technology; Estonia
Member (Name, Surname, University/organization/Country)	Vakhtang Balavadze Georgian Technical University; Georgia
Member (Name, Surname, University/organization/Country)	Nana Iashvili Tbilisi State Academy of Arts; Georgia
Member (Name, Surname, University/organization/Country)	Anzhela Abuladze Tbilisi State University; Georgia

Accreditation Report Executive Summary

- **General information on the education programme**

  Building Systems' Engineering (BSE) is a new Bachelor programme consisting of 242 credits and it has been initiated by the Free University of Tbilisi. At the moment it is considered as an inter-disciplinary one which will grant the qualification of Bachelor of engineering in construction engineering and management.

- **Brief overview of the accreditation site-visit**

  The accreditation site-visit in Free University of Tbilisi (FUT) was carried out on October 25/2019. During this visit the accreditation panel experts met with:
  - met with the University (FUT) administration
  - the members of the SER compiling team
  - the programme director and the academic staff
  - the students and alumni of different from different other programmes
  - the representatives of the potential employers for the BSE graduates

  The experts enjoyed a tour in the University premises, visiting different labs, classrooms and the library.

- **Summary of education programme's compliance with the standards**

  In general, the new BSE programme meets the relevant accreditation standards for higher education programmes. In particular:

  - as to the first (educational programme objectives, learning outcomes and their compliance with the programme) the programme substantially complies with the requirements of the standard
  - as to the other four standards the programme fully complies with the requirements of these standards

- **Summary of Recommendations**

  Based on the study of the SER documents and the site visit and interviews in FUT the accreditation panel experts have done the following recommendations:

  As for sub-chapter 1.2 and 2.2:

  - the outcomes should be clearly targeted to the BSE study programme objectives: it will simplify for the school-graduates when selecting the opportunities for their studies, and also for the employers when looking for the staff from agmongst the graduates of the programme
  - the accreditation panel experts' opinion is that the BSE programme is an engineering programme and as the priority, the outcomes of the programme should be in line

with NQF requirements; considering additionally ABET requirements will give only added value to the study programme

As for sub-chapter 2.3:

- o More Georgian language study materials should be provided as a priority for these courses where the amount of independent work for the students is relatively high.

- **Summary of Suggestions**

Based on the study of the SER documents and the site visit and interviews in FUT the accreditation panel experts have done the following suggestions:

As for sub-chapter 1.1:

- o The syllabi should be more tailored to the BSE related knowledge.

As for sub-chapter 1.2:

- o Learning outcomes must be clear and attractive for the society to assure the success of the programme.

As for sub-chapter 3.1:

- o Promote greater use of international mobility by students

As for sub-chapter 4.3:

- o Due to quite specific nature of the BSE studies also specialised labs and stands will be needed to support the academic studies; it will be the opportunity to develop co-operation with the companies providing these systems on the marketplace.

- **Summary of best practices (If Applicable)**

  not applicable

- **In case of accredited programme, summary of significant accomplishments and/or progress (If Applicable)**
-

  not applicable

Compliance of the Programme with Accreditation Standards

1. **Educational programme objectives, learning outcomes and their compliance with the programme**

   A programme has clearly established objectives and learning outcomes, which are logically connected to each other. Programme objectives are consistent with the mission, objectives and strategic plan of the institution. Programme learning outcomes are assessed on a regular basis in order to improve the programme.

1.1 Programme Objectives
Programme objectives define the set of knowledge, skills and competences the programme aims to develop in graduate students. They also illustrate the contribution to the development of the field and the society.
Descriptive summary and analysis of compliance with standard requirements Educational objectives of the bachelor's programme in building systems' engineering are as follows: - Prepare required and successful graduates in the field of building systems' engineering.   - Enable graduates to apply critical thinking and decision-making skills, acquired during the study period, in professional activities, to have adaptation skills in a changing environment by applying innovative inter-disciplinary knowledge in career growth.   - Enable students to pursue studies at higher education level in engineering field in Georgia, as well as abroad, and to be ready to upgrade and obtain new knowledge, pursuant to the changes in the selected field.   The programme consists of 242 credits and the structure of these meets the relevant standards. During the interviews it became clear that in Georgia there is great need for such specialisation targeted to BSE – electricity, HVAC, sewage etc. systems installed currently in the buildings. The list of objectives of the programme include substantial contradiction – firstly it is highlighted, that it provides "innovative inter-disciplinary knowledge", but shortly after that the programme is "in engineering field". The programme covers wide spectrum of the fundamentals of engineering, but include also courses in mathematics, physics and chemistry. Currently the programme in BSE is new compared to the existing study programmes. When designing the content of new profile programmes and courses one should target more to the specialisation. There is the course of "fundamentals of economics", but especially the employers highlighted the need for "engineering economics" to be enclosed. General physics is of importance for engineers, but BSE professionals would need "building physics". "English language" studies on the first semester will improve the language knowledge of the students, but the language study should be tailored to the profession. This is especially important due to the studies in the future – the main textbooks will be provided in English, but the studies in Georgian. The panel considers that the programme is rather an engineering one, and the interdisciplinary element is provided through the joint projects with architecture students. Generally – the new programme fully meets the Free University of Tbilisi moto "Scientia. Labor. Libertas."
Evidences/indicators   - self evaluation report   - interviews

Recommendations:
no any

Suggestions for programme development:
▪ The syllabi should be more tailored to the BSE related knowledge.

Best Practices (if applicable):
no applicable

In case of accredited programme, significant accomplishments and/or progress
not applicable

Evaluation

☑ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

1.2. Programme Learning Outcomes

> ➢ Programme learning outcomes describe knowledge, skills, and/or the sense of responsibility and autonomy, students gain upon completion of the programme;
> ➢ Programme learning outcomes assessment cycle consists of defining, collecting and analysing data;
> ➢ Programme learning outcomes assessment results are utilized for the improvement of the programme.

Descriptive summary and analysis of compliance with standard requirements

Learning outcomes of the BSE programme are listed using 11 (eleven) aspects according to which the graduates have received "a wide knowledge", or they have to be "able to". This list is quite ambiguous, but not all are really measurable, as required by the Accreditation Standards). From the total list (11) of outcomes three (3) are related to wide knowledge of general education and ethics; in six (6) cases different Engineering outcomes are highlighted, and management and decision making and communication skills are emphasised in five (5) outcomes (e.g. b*e able to perform an effective action based on cooperation and engagement in a team and manage processes*). At the same time the study programme lacks management related subjects there.

Accordingly – the list of outcomes currently is quite chaotic. The outcomes may be in line with the criteria of Accreditation Board of Engineering and Technologies (ABET), but are not meeting the NQF requirements (stated in the Accreditation Standards for Higher Education Programmes). For

example, amongst the outcomes there is no any indication about the competences related to building systems the whole programme is targeted to.

Here also the major conflict between the programme content, learning outputs, and the NQF requirements appear in relation to qualification to be awarded. The programme – as stated earlier – according to the content and based on the experts' opinion, is rather an engineering one, not an interdisciplinary one. The expected qualification to be granted "bachelor of engineering in construction engineering and management" does not depict the content and aims of the programme. There are no management – in particularly – construction management studies there in the programme, and the share of construction/structural engineering is also relatively small.

Construction management skills normally require all the onsite responsibilities related to organising a construction project, incl. managing the budget and the construction workers, collaborating with the architects, civil engineers and consultants, advising the owners and clients, but also hiring the subcontractors.

Evidences/indicators

- self evaluation report
- interviews

Recommendations:

- the outcomes should be clearly targeted to the BSE study programme objectives: it will simplify for the school-graduates when selecting the opportunities for their studies, and also for the employers when looking for the staff from agmongst the graduates of the programme
- the accreditation panel experts' opinion is that the BSE programme is an engineering programme and as the priority, the outcomes of the programme should be in line with NQF requirements; considering additionally ABET requirements will give only added value to the study programme

Suggestions for programme development:

- learning outcomes must be clear and attractive for the society to assure the success of the programme

Best Practices (if applicable):

no applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☐ Complies with requirements

☐ Substantially complies with requirements

☑ Partially complies with requirements

☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Educational programme objectives, learning outcomes and their compliance with the programme		X		

2. Teaching methodology and organization, adequate evaluation of programme mastering

Programme admission preconditions, programme structure, content, teaching and learning methods, and student assessment ensure the achievement of programme objectives and intended learning outcomes.

2.1. Programme Admission Preconditions
Higher education institution has relevant, transparent, fair, public and accessible programme admission preconditions.
Descriptive summary and analysis of compliance with standard requirements Admission to the bachelor's educational programme in Building systems' engineering (BSE) is regulated according to the legislation of Georgia and by the regulation of Free University of Tbilisi (FUT). Educational Programme admission prerequisites comply with the legislation, according to which any holder of the state certificate/diploma confirming completion of secondary education, in accordance with the provisions of the Law of Georgia on Higher Education and the Order N19 / N of the Minister of Education and Science of Georgia from February 18, 2011 and in accordance with the statute of conducting Unified National Examinations, has the right to study the undergraduate programme at FUT. Also, to encourage applicants and promote student's mobility, students can be enrolled in an educational programme alternatively- without passing the Unified National Examinations, according to the rule and terms established by the Ministry of Education and Science of Georgia. These terms of admission to the programme and other relevant information are public, transparent and easily accessible as they will be annually posted on the website of the National Centre of Evaluation and Examinations and directory. The terms of admission to the programme are aligned with the current legislation. Moreover, goals are clarified and information about the course of lessons is given to all concerned.

Evidences/indicators

o   Educational Programme (Admission requirements)
    o   Self-Evaluation Report
    o   Interviews with the Head of the programme, with the academic and invited staff implementing the programme

Recommendations:
no any
Suggestions for programme development:
no any
Best Practices (if applicable):
not applicable
In case of accredited programme, significant accomplishments and/or progress
not applicable

Evaluation
 	
   ☑ Complies with requirements
 	
   ☐ Substantially complies with requirements
 	
   ☐ Partially complies with requirements
 	
   ☐ Does not comply with requirements

2.2 Educational Programme Structure and Content
Programme is designed according to HEI's methodology for planning, designing and developing of educational programmes. Programme content takes programme admission preconditions and programme learning outcomes into account. Programme structure is consistent and logical. Programme content and structure ensure the achievement of programme learning outcomes. Qualification to be granted is consistent with programme content and learning outcomes.
Descriptive summary and analysis of compliance with standard requirements Programme is designed according to HEI's methodology for planning, designing and developing of educational programmes and consists of the following components: General Education: (50 credits-University general education, 2 credits-General education courses of engineering) Major: (112 credits-Major education of integrated systems engineering, 50 credits Basic education of engineering, 9 credits-Practical education Elective courses-19 credits The structure and content of the programme ensure the achievement of programme learning outcomes. but we have remarks towards the qualification to be granted within this program / we have concerns towards the qualification to be granted within this program.

The "Building Systems Engineering" Bachelor's educational programme qualification by the content and learning outcomes are more applicable to the "Bachelor of Engineering in Building Systems Engineering" qualification, rather than "Bachelor of Engineering in Construction Engineering and Management".

As the interviews with the Head of the program and university administration revealed, the given issue has been well- acknowledged by the program staff as well. According to them, the reason beyond is that the relevant qualification to be accredited is not yet presented in the list of qualifications of the National Qualifications framework for Georgian Higher Education. Therefore, while planning and designing the program, its staff had to choose and adjust the qualification which would be relatively compatible to the program content and the corresponding field. In this regard, it's also noteworthy that program staff intensively holds consultations with the Centre about the possible inclusion of the given qualification in the National Qualifications Framework for Higher Education.

Evidences/indicators

- o   Self evaluation report
- o   Syllabi
- o   Semester plan/schedule

Recommendations:

- •   Identical to these of the sub-chapter 1.2 of the current report

Suggestions for programme development:

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☐ Complies with requirements

☑ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.3 Course

> ➢ Student learning outcomes of each compulsory course are in line with programme learning outcomes; Moreover, each course content and number of credits correspond to course learning outcomes;
>
> ➢ Teaching materials listed in syllabi are based on the core achievements in the field and ensure the achievement of intended programme learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

Programme content, volume and complexity correspond to the Higher Education level.

The study courses envisaged by the programme are designed to ensure that their purpose, learning outcomes and teaching methods meet the goals of the educational programme and its learning outcomes. The programme structure is modelled logically and consistently as main study courses are derived from each other, are consistent with content and focused on the development of the skill of using field competences and theoretical knowledge in practice.

Learning outcomes of each study course mainly correspond to the learning outcomes of educational programme which are aimed at developing the necessary field competences for the graduates and combine knowledge, skills and values. The possibility of achieving the educational programme goals and learning outcomes has been envisaged for each study course through determining and distributing relevant credit, contact and independent work hours for each course.

The Syllabi of the courses are well structured and student-oriented as they contain all the necessary information, such as Name of the course, course type, number of credits corresponding to contact and independent hours of instruction, course authority, course objective, course format, learning outcomes, evaluation system and criteria, teaching / learning methods, course content, training and other resources. In certain cases, however, the code of the educational course is missing from the syllabi.

As for the programme structure, the educational programme includes 2 and 7 ECTS credits, which are allocated according to the course content and learning outcomes. Contact hours are distributed on the logical bases which means, those courses requiring more contact hours have been allocated more contact hours, and for the courses more focused on independent work, less contact hours have been allocated.

The analysis of the documentation provided showed that the literature has been selected based on the novelties of the field. However, expert panel had a specific comment towards the compulsory literature. Even though a considerable number of syllabi include the summaries of the lectures and presentations in Georgian language prepared by the lecturer, most of them (for example, HVAC systems, Electrical circuits, Principles of heat transmission, Thermodynamics, Hydraulics, Material Science, Mechanics of Fluids, etc.) still provide main textbooks in English which, according to the opinion of the panel, might be a problem for the newly enrolled students because of a relatively low level of English at the beginning of their studies. Here, the interviews revealed that university administration does not see any problem in this particular point, because the majority of students enrolled in the university are fluent in English. Additionally, if the student does not have sufficient competence in English, the University offers them additional English Language courses (B1, B1-2, B2-1, B2-2) for free.

In regard to it, during the on site visit experts of the panel have been provided with the statistical data by the administration, which also proved that most new-comer students/freshmen really have appropriate knowledge of English.

As a credit is a measure of student workload based on the time necessary to complete a given teaching/learning unit, and in ECTS terms: the number of hours of student work (that is, of the typical student) required to achieve a given set of learning outcomes (on a given level), it is crucially important for the programme to distribute credits logically and reasonably by considering the real workload students have to cope with.

In calculation of the workload, the following items are taken into consideration: the total number of contact hours for the course unit (number of hours per week x number of weeks), preparation before classes and finalizing notes after attending the lecture / seminar, and the amount of further independent work required to finish the course successfully. The last item is discipline-specific and largely depends on the complexity of the topic. Independent work involves the following: collection and selection of relevant material, reading and studying of this material, preparation for an oral or written examination, writing a paper or thesis and independent work in a lab. So, evidently, independent work plays an important role in the process of passing the course, so compulsory literature listed in the course curriculum should be understandable to all students in order to successfully perform all activities related to independent work.

Here are some of the courses which clearly show the ratio of contact and independent work hours:

ECTS credit 5 (140 hours)- Principles of heat transmission, Mechanics of Fluids, Thermodynamics

Contact hours - 47 hours; Independent work - 93 hours.

ECTS credit 6 (168 hrs.)- Engineering mechanics (statics and dynamics)

Contact hours - 47 hrs.; Independent work - 116 hrs.

Taking into account the fact that the Language of instruction of the BSE programme is Georgian and programme does not require minimal competence levels in the English Language, also considering the importance of independent work, we strongly believe that students should be provided with relevant teaching/learning materials in Georgian. Therefore, it is necessary to prepare the book-readers or synopsis in Georgian for these courses.

Evidences/indicators

- o Educational programme
- o Curriculum
- o A semester plan
- o Syllabi
- o Self-Evaluation Report
- o Interviews with the Head of the programme, with the academic and invited staff implementing the programme

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Recommendations:

- More Georgian language study materials should be provided as a priority for these courses where the amount of independent work for the students is relatively high.

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☐ Complies with requirements

☑ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

2.4 The Development of practical, scientific/research/creative/performance and transferable skills

Programme ensures the development of students' practical, scientific/research/creative/performance and transferable skills and/or their involvement in research projects, in accordance with the programme learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

The courses of the BSE programme envisage practical and laboratory classes in order to develop students' practical and research skills relevant to the learning outcomes of the programme. The programme also contains a separate set of educational courses to enhance practical skills such as: "Field Practice" and "On-the-job training in engineering", which are planned in accordance with learning outcomes and adjusted to individual research interests of each student. Practical and laboratory classes are systematic and well-integrated throughout various courses.

It should also be noted that thanks to the courses: "building engineering projects"- Junior Project, Conception, Final Project, students will be involved in the process of real project implementation, learn to match acquired specific experience with other areas of knowledge and transfer it into other contexts, utilizing a variety of new technologies and initial conception from different disciplines

In the presented educational programme, the learning tasks are well-linked to the students' prior knowledge, are appropriately demanding, and integrated into meaningful contexts, thus promoting the acquisition and development of new competencies and knowledge.

Evidences/indicators

- o Educational programme
- o Syllabi
- o Curriculum
- o Visit to laboratories
- o Self-Evaluation Report
- o Interviews with the Head of the programme, with the academic and invited staff

Recommendations:

no any

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress
not applicable

Evaluation
☑ Complies with requirements ☐ Substantially complies with requirements ☐ Partially complies with requirements ☐ Does not comply with requirements

2.5 Teaching and learning methods
Program is implemented using student centred teaching and learning (SCL) methods. Teaching and learning methods correspond to the level of education, course content, student learning outcomes and ensure their achievement.

Descriptive summary and analysis of compliance with standard requirements
The educational programme is implemented by using student-centred teaching and learning methods. Teaching, learning and evaluation methods provided in the programme include the following: Verbal method of teaching, Method of working on a book, Written-work method, Group-work, Discussions/debates, Method of analysis, Deductive method, Inductive method, Explanatory method, Demonstration method, Laboratory method, Practical classes, Action - oriented teaching, etc. Methods and forms used are derived from the learning outcomes of the specific study course. Teaching and learning methods correspond with the level of education, course content, learning outcomes and ensure their achievement. Moreover, one of the basic principles of the programme is to focus on the diversity and individuality of the students, and therefore, it creates favourable conditions for the equal and active participation of all students in all its activities. Finally, shared and individual learning opportunities are guaranteed for all students.

Evidences/indicators
o Educational programme o Syllabi of educational courses o Self-Evaluation Report

Recommendations:
no any

Suggestions for programme development:
no any

Best Practices (if applicable):
not applicable

In case of accredited programme, significant accomplishments and/or progress
not applicable

Evaluation
☑ Complies with requirements
☐ Substantially complies with requirements
☐ Partially complies with requirements
☐ Does not comply with requirements

2.6. Student Evaluation

Student evaluation is conducted in accordance with established procedures. It is transparent and complies with existing legislation.

Descriptive summary and analysis of compliance with standard requirements

As the programme is new, the expert panel has based its discussion on existing regulations and procedures regarding student evaluation, on student interviews and the interviews with the alumni of the BA level of different programmes.

The university has a regulatory evaluation system for students in place, which is transparent and fair to every student and complies with the legislation. Student evaluation is regulated by the provision of bachelor's programme. It is uploaded on the webpage and is thus accessible to anyone. Furthermore, the University has taken measures to check the competence development of students and the evaluation takes place in a performance-enhancing form. More specifically, the evaluation is multi-component and provides the evaluation of goals and learning outcomes of every course, which is achieved using particular and measurable criteria and rubrics. Evaluation is performed by utilizing a 100-point system. Points are distributed and defined as follows:
- o Excellent – evaluation of 91 - 100 points
- o Very good – maximum evaluation of 81 - 90 points
- o Good – maximum evaluation of 71 - 80 points
- o Satisfactory – maximum evaluation of 61 - 70 points
- o Acceptable – maximum evaluation of 51 - 60 points
- o (FX) Did not pass – maximum evaluation of 41 - 50 points, meaning that a student needs to work more to pass and is given one opportunity to pass an additional exam by working independently

o Fail – maximum evaluation of 40 points and less, which means that the work carried out by the student is not sufficient and he/she has to retake the course. The main evaluation methods, that are used within the programme components/course, are determined	

Evidences/indicators

- o Educational programme
- o Education courses' syllabi
- o Provision of bachelor's programme
- o Webpage of FUT
- o Self-Evaluation Report

Recommendations:

no any

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☑ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Teaching methodology and organization, adequate		X		

evaluation of programme mastering				

3. Student achievements and individual work with them

HEI creates student-centred environment by providing students with relevant services; programme staff ensures students' familiarity with the named services, organizes various events and fosters students' involvement in local and/or international projects.

3.1. Student support services
Students receive appropriate consultations and support regarding the planning of learning process, improvement of academic achievement, employment and professional development.
Descriptive summary and analysis of compliance with standard requirements   As the programme in BSE is a new one and there are no students yet admitted to these studies, we met the students and alumni from other programmes – from architecture and electronic engineering. During the site visit, staff, students and alumni confirmed that students are provided with relevant individual consultation and support services. Students are supported in career planning, and using their achievement for career advancement. In any time all the students and graduates are free to contact the programme head and a coordinator. Individual course based consultancy is provided for the students by all the academic and invited staff.   There are opportunities for mobility abroad, although there is a very low take-up of these opportunities. The university encourages students to participate in conferences and many students and alumni interviewed had already participated in research conferences, both at local and international level.   In SER it is expected that the alumni of the BSE programme will be competitive professionals both in Georgia and abroad. At the same time during the interviews with the students and alumni from different programmes we learned that they have no international mobility experience. But this experience is clearly valuable for working abroad.   There is clearly a need to promote greater use of international mobility by the BSE students.
Evidences/indicators   o   …
Recommendations: no any
Suggestions for programme development: • Promote greater use of international mobility by students
Best Practices (if applicable):   not applicable
In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

    ☑ Complies with requirements

    ☐ Substantially complies with requirements

    ☐ Partially complies with requirements

    ☐ Does not comply with requirements

3.2. Master's and Doctoral Student supervision
Master's and Doctoral students have qualified thesis supervisors.
This chapter is not applicable for the current report

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Student achievements and individual work with them	X			

4. Providing teaching resources

Programme human, material, information and financial resources ensure programme sustainability, its effective and efficient functioning, and achievement of intended objectives.

4.1 Human Resources
➢ Programme staff consists of qualified people who have necessary competences in order to help students achieve programme learning outcomes;
➢ The number and workload of programme academic/scientific and invited staff ensures the sustainable running of the educational process and also, proper execution of their research/creative/performance activities and other assigned duties. Balance between academic and invited staff ensures programme sustainability;
➢ The Head of the Programme possesses necessary knowledge and experience required for programme elaboration. He/she is personally involved in programme implementation;
➢ Programme students are provided with an adequate number of administrative and support staff of appropriate competence.

Descriptive summary and analysis of compliance with standard requirements

For the BA program in "building systems' engineering" of the Free University of Tbilisi the workload of academic / scientific and invited staff and scientific-research activities should be adequate. Thus, the university has developed a methodology for determining the number of academic, scientific and invited staff of the program, to which the Strategic Review and Plan of the Free University of Tbilisi (article 8.5) is dedicated. According to SER workload of academic / scientific and invited personnel fully ensure carrying out the learning process, defined by the educational programs and proper performance of scientific-research activities and all functions.

During the site visit academic / scientific and invited staff confirmed, that the University periodically evaluates academic personnel and plans their professional development activities. The balance between academic and invited staff ensures program sustainability.

The program supervisor has necessary knowledge and experience for drafting a program and is personally involved in program implementation. Professors, head of the program, academic administration and other internal and external resources discuss and agree on the objectives of the university and the programme and ways to achieve them. The number of academic personnel at the programme is adequate regarding the estimated number of students, 30 students per year. The number of programme staff (incl. the academic, scientific, invited staff) is planned to be 55. From these:

- Professors - 12
- Associated professors - 5
- Assistant Professors – 3
- Invited staff - 34

The qualifications and competence of the academic staff, involved in the programme are evidenced by their scientific works, creative and practical projects, which are in full compliance with the legislation in force. Prior to taking up an academic position (both academic and invited) staff qualifications are verified not only on the basis of the documentation submitted by the candidate, but also on the interview / demonstration lecture.

The expert team did not assess in depth the level of involvement of the academic, research, and invited staff in the scientific / research activity as evidence that staff are involved, track their achievements in the field, and / or participate in the reproducibility (or creation of new knowledge). There is no doubt that the university has a policy of supporting scientific / research work, which is financially sound and allows the university's academic, scientific staff to be involved in research, scientific conferences and more. However, based on the general university data available for the panel experts, we cannot discuss in detail the research activities of the staff involved in this particular BSE programme. It is desirable for the University to be able to generate data on academic / research staff at the programme level and make it available on the University website.

An adequate number (26) and competent administrative staff will serve future students. With daily feedback and attention, they will be able to take into account the needs and interests of students. In this regard, it is particularly effective to have the dean of students who responds quickly to students' messages, is ready to meet with them within a short period of time, to assist the administration if needed, or to assist them in any other way.

Interviewing with other programme students and alumni proves that their relationship with the administration is straightforward.

Evidences/indicators

- o   Personal files of staff
- o   Employment contracts
- o   University Strategic Review and Plan (Subsection 8.5.)

o   SER
o   Interview results

Recommendations:
no any

Suggestions for programme development:
no any

Best Practices (if applicable):
not applicable

In case of accredited programme, significant accomplishments and/or progress
not applicable

Evaluation
☑ Complies with requirements
☐ Substantially complies with requirements
☐ Partially complies with requirements
☐ Does not comply with requirements

4.2 Professional development of academic, scientific and invited staff
➢ HEI conducts the evaluation of programme academic, scientific and invited staff and analysis evaluation results on a regular basis;
➢ HEI fosters professional development of the academic, scientific and invited staff. Moreover, it fosters their scientific and research work.

Descriptive summary and analysis of compliance with standard requirements
During the visit, the group of experts learned that the result monitoring of the annual activity of the academic staff and scientists is carried out by the Academic Personnel Professional Development Manager, who plans the events to support staff's professional development. Taking into account the results of the research carried out by the Quality Assurance Service, it takes care to correct the weaknesses of the teaching process and to this end conducts meetings and trainings with academic staff every semester. It also conducts training and benchmarking sessions for newly elected academic and invited staff on syllabus development, modern teaching approaches (for example, using the Moodle Platform) and assessment methods to facilitate their integration into the university space. During the visit was also represented the scheme for estimating a scientist's annual activities: "a scientist's productivity assessment is in the piloting and testing process in order to provide the evaluation of a scientist's performance over a period of time based on the results achieved within that time-frame" from SER. The workload of the academic staff, along with the study has been shown to include scientific research and other work such as grants, university infrastructure and space, publication of articles in Impact Factor journals, publishing books, textbooks and monographs, and doctoral guidance.

In addition to training and workshops, Free University encourages its academic staff to carry out scientific-research activities for them, for example by co-financing an international conference.

Evidences/indicators

- o Staff personal files

- o Interview with the staff

- o Strategic review and Plan of Free University of Tbilisi

Recommendations:

no any

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☑ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

4.3. Material Resources

Programme is provided by necessary infrastructure and technical equipment required for achieving programme learning outcomes.

Descriptive summary and analysis of compliance with standard requirements

The educational programme will be implemented at the premises of Kakha Bendukidze's campus, which is equipped with the inventory and all the other resources necessary for obtaining a high-quality education. According to the experts, studios and classroom facilities, as well as existing parts of the university that will serve the new programme (auditoriums, library, cafeteria, etc.), are in general ready to apply for the undergraduate programme of the "Building Systems' Engineering" in the near future.

Studies in building systems require still some quite specific laboratories and stands for HVAC, water and sewage systems, but also for indoor lighting and noise studies. Several of these facilities can be procured in partnership with the companies working in this sector, but a clear vision should be there how the hands-on teaching possibilities would be provided for the students.

The programme is provided with appropriate library, material, technical and financial resources. Academic and invited staff assure that the library is always ready to purchase the prescribed and any other necessary literature. Interviewed students say that the library meets their needs. According to the same survey, WI-FI technology on the campus territory organized so, that it ensures joining to internet according to respective number of internet users in each classroom and available at Elsevier's international electronic database. The Free University of Tbilisi clearly understands the need for constant upgrading of technical infrastructure and is likely to seek administration every year. The University administration provides individual and uninterrupted training courses for the students with special needs.

Evidences/indicators

- o   Library, material and technical resources
- o   Results of student surveys conducted by HEI
- o   Interview results

Recommendations:

no any

Suggestions for programme development:

- •   Due to quite specific nature of the BSE studies also specialised labs and stands will be needed to support the academic studies; it will be the opportunity to develop co-operation with the companies providing these systems on the marketplace.

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☒ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

4.4.Programme/faculty/school budget and programme financial sustainability

The allocation of financial resources stipulated in programme/faculty/school budget is economically feasible and corresponds to programme needs.

Descriptive summary and analysis of compliance with standard requirements

In the Free University of Tbilisi, by the SER of the programme "Building Systems' Engineering", educational programmes do not have independent budgets. The University financial model unifies budgets of all programmes and administrative units.

A financial report presented, including a financial part of the "Building Systems Engineering" programme, proves that the programme will be financially sustainable. The programme is of strategic importance for achieving the University's mission and goals and subsidized by the university.

The funding received from tuition fees of undergraduate and graduate students is the principal financial source of the Free University of Tbilisi (89, 8 % of total revenues).

- Students' payments - 63%
- State educational grants- 37%
- Social grants- 0%
- Other financing-0%

The Free University of Tbilisi also has grants for financing scientific projects (2, 7 % of total revenues), international grants for specific projects (3, 4% of total revenues) and revenues from different certification programmes (4, 1 % of total revenues).

The Free University of Tbilisi intends to spend minimum 10% of consolidated expenditures on research funding annually. 5% of above should be outside university funding, and at least 5% internal university funding.

Evidences/indicators

- o Budget
- o SER of the programme
- o Interview results

Recommendations:

<div align="center">no any</div>

Suggestions for programme development:

<div align="center">no any</div>

Best Practices (if applicable):

<div align="center">not applicable</div>

In case of accredited programme, significant accomplishments and/or progress

<div align="center">not applicable</div>

Evaluation

☑ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Providing teaching resources	X			

5. Teaching quality enhancement opportunities

In order to enhance teaching quality, programme utilizes internal and external quality assurance services and also periodically conducts programme monitoring and programme review. Relevant data is collected, analysed and utilized for informed decision making and programme development on a regular basis.

5.1 Internal quality
Programme staff collaborates with internal quality assurance service(s) available at the higher education institution when planning the process of programme quality assurance, creating assessment instruments, and analysing assessment results. Programme staff utilizes quality assurance results for programme improvement.
Descriptive summary and analysis of compliance with standard requirements   There is a system of internal quality assurance in place at an institutional level, which supports quality enhancement at programme level. The SER (Section 5.1) indicates that the internal quality assurance of the university is aligned with the principle of the PDCA cycle (Plan, Do, Check, Act) and this supports programme implementation. It also outlines the sequence of events involved in the internal quality assurance process, including preparation of a programme report by the programme co-ordinator and its submission to the Faculty Board.   As noted earlier, further developing the use of curriculum mapping offers much potential for supporting this fifth standard, enabling the team to promote transparency for students and staff; programme balance and coherence; efficiency in teaching, learning and assessment approaches; and ensuring key institutional priorities are reflected in the programme. The pursuit of 'constructive alignment' in ongoing programme review can help the programme team consider the extent to which students are actively involved in the learning process. The second element, 'alignment' refers to the correspondence or match between the intended learning outcomes, the teaching and learning activities, and the assessment tasks used to verify that the intended outcomes have been achieved.

The Quality Assurance Service of the University conducts surveys on the satisfaction of students twice a year. However, while there is a high level of collaboration between the programme staff and the internal quality assurance service, there is potential to further develop the level of critical reflection taking place.

Evidences/indicators

- o Interview results
- o Benchmarking
- o Stakeholders' reports

Recommendations:

no any

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☑ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

5.2 External quality

Programme utilizes the results of external quality assurance on a regular basis.

Descriptive summary and analysis of compliance with standard requirements

FUT has implemented the practice of using the regular feedback in all the everyday fields of activities. Therefore the experts of the panel are convinced that this quality assessment system will be used also for the BSE programme. The educational programme in FUT uses an external quality assessment mechanism based on the "Accreditation Regulation for Educational Institutions" and "Authorization for Educational Institutions".

The educational programme regularly uses the results of external quality evaluation (survey of graduates, employers and other interested persons, external examination of educational programmes, etc.), discusses and adopts recommendations to develop educational programmes.

Within the framework of the monitoring visit, the information presented in the self-evaluation document was confirmed during interviews with the representatives of the administration and students. Also during the visit we checked some of the issues and confirmed the reliability of the information.

Evidences/indicators

- o Interview results
- o Benchmarking
- o Stakeholders' reports

Recommendations:

no any

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation

☑ Complies with requirements

☐ Substantially complies with requirements

☐ Partially complies with requirements

☐ Does not comply with requirements

5.3. Programme monitoring and periodic review

Programme monitoring and periodic review is conducted with the involvement of academic, scientific, invited, administrative staff, students, graduates, employers and other stakeholders through systematically collecting and analysing information. Assessment results are utilized for programme improvement.

Descriptive summary and analysis of compliance with standard requirements

Programme monitoring and periodic review in FUT is conducted with the involvement of academic, scientific, invited, administrative staff, students, graduates, employers and other stakeholders through systematically collecting and analysing information. Assessment results are utilized for all the programmes improvement.

Within the framework of the monitoring, in order to evaluate and develop the programme, Quality Assurance Service ensures the monitoring of study process, which envisages evaluation of study and examination materials, monitoring of exams and analysis of results. Over the years, Quality Assurance Service is conducting student surveys for evaluation the learning process, whose analysis serves as basis for development of recommendations. The survey of graduates and employers is done via electronic system.

Evaluation mechanism systematically develops recommendations, on bases of which programme is developed. Planning, elaborating, effective implementation and support of development and monitoring of an educational programme is coordinated by the University and Faculty Quality Assurance Service.

Within the framework of the monitoring visit, the information presented in the self-evaluation document was confirmed during interviews with the representatives of the administration and students. Also during the visit we checked some of the issues and confirmed the reliability of the information.

Evidences/indicators

- o Interview results
- o Educational programme
- o Self-evaluation report
- o Evaluation results

Recommendations:

no any

Suggestions for programme development:

no any

Best Practices (if applicable):

not applicable

In case of accredited programme, significant accomplishments and/or progress

not applicable

Evaluation
☑ Complies with requirements ☐ Substantially complies with requirements ☐ Partially complies with requirements ☐ Does not comply with requirements

Programme's Compliance with Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
Teaching quality enhancement opportunities	X			

Enclosed Documentation (If Applicable)

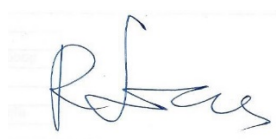HEI's Name: Free University of Tbilisi

Higher Education Programme Name: Building systems' engineering

Number of Pages of the Report: 29

Programme's Compliance with the Standard

Standard	Complies with Requirements	Substantially complies with requirements	Partially Complies with Requirements	Does not Comply with Requirements
1. Programme objectives are clearly defined and achievable; they are consistent with the mission of the HEI and take into consideration labour market demands		X		
2. Teaching methodology and organization, adequate evaluation of programme mastering		X		
3. Student achievements and individual work with them	X			
4. Providing teaching resources	X			
5. Teaching quality enhancement opportunities	X			

Expert Panel Chair's

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Expert Panel Members'

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