



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETO
STUDIJŲ PROGRAMOS
GAISRINĖ SAUGA (valstybinis kodas – 612H12001)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF FIRE PROTECTION (state code – 612H12001)
STUDY PROGRAMME
At VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

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Išvados parengtos anglų kalba
Report language - English

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

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| Studijų programos pavadinimas | <i>Gaisrinė sauga</i> |
| Valstybinis kodas | 612H12001 |
| Studijų sritis | Technologijos mokslai |
| Studijų kryptis | Bendroji inžinerija |
| Studijų programos rūšis | Universitetinės studijos |
| Studijų pakopa | Pirmoji |
| Studijų forma (trukmė metais) | Nuolatinė (4) |
| Studijų programos apimtis kreditais | 240 |
| Suteikiamas laipsnis ir (ar) profesinė kvalifikacija | Saugos inžinerijos bakalauras |
| Studijų programos įregistravimo data | 2002 m. birželio 14 d. |

INFORMATION ON EVALUATED STUDY PROGRAMME

| | |
|---|--------------------------------|
| Title of the study programme | <i>Fire Protection</i> |
| State code | 612H12001 |
| Study area | Technological Sciences |
| Study field | General Engineering |
| Type of the study programme | University studies |
| Study cycle | First |
| Study mode (length in years) | Full-time (4) |
| Volume of the study programme in credits | 240 |
| Degree and (or) professional qualifications awarded | Bachelor in Safety Engineering |
| Date of registration of the study programme | 14 June, 2002 |

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I. INTRODUCTION

1.1. *Background of the evaluation process*

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

The evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: 1) *self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI)*; 2) *visit of the review team at the higher education institution*; 3) *production of the evaluation report by the review team and its publication*; 4) *follow-up activities*.

On the basis of external evaluation report of the study programme SKVC takes a decision to accredit the study programme either for 6 years or for 3 years. If the programme evaluation is negative such a programme is not accredited.

The programme is **accredited for 6 years** if all evaluation areas are evaluated as “very good” (4 points) or “good” (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

The programme **is not accredited** if at least one of evaluation areas was evaluated as “unsatisfactory” (1 point).

1.2. *General*

The Application documentation submitted by the HEI follows the outline recommended by SKVC. Along with the self-evaluation report and annexes, no additional documents have been provided by the HEI before.

The procedures for the external evaluation of the *Fire Protection Study Programme* at Vilnius Gediminas Technical University were organized by the Centre for Quality Assessment in Higher Education in Lithuania. It selected and appointed the external Review Team.

For the evaluation, the following documents were used:

1. Law on Higher Education and Research of Republic of Lithuania;

2. General Requirements of the First Degree and Integrated Study Programmes (GRFD);
3. Descriptor of Study Cycles (V-2212);
4. Methodology for Evaluation of Higher Education Study Programmes.

The basis for the evaluation of the study programme is the Self-Assessment Report, including annexes (hereafter, referred to as the SAR) prepared in 2015, and the site visit of the Review Team to the Vilnius Gediminas Technical University and to Fire Research Centre and Fire Fighters Training School on Tuesday 10th May 2016. The visit included meetings with different groups: the administrative staff of the University; staff responsible for preparing the SAR; teaching staff; students currently on the programme; and social partners, employers and alumni associated with the programme. The Review Team evaluated various support services (classrooms, laboratories, library, computer facilities), examined a sample of students' final work including final theses and the assessment reports of these theses, and various other materials. After the Review Team discussions and the additional preparation of conclusions and remarks, preliminary general conclusions of the visit were presented to the community of the University. After the visit, the Review Team met to discuss and agree on the content of the final report, which represents the agreed views of the Team.

1.3. Background of the HEI/Faculty/Study field/ Additional information

The first cycle study programme *Fire Protection* is implemented at the Vilnius Gediminas Technical University (hereinafter VGTU or University). VGTU is a state higher education institution and is one of the largest higher education institutions in Lithuania. The VGTU has about 13500 students in BSc, MSc and PhD studies. The university's mission "*is to develop a publicly responsible, creative, competitive individual who is receptive to science, the latest technologies and cultural values; to promote scientific progress, social and economic well-being; to create value that ensures the development of both Lithuania and the region in the global context*". The vision of the University includes: "*to be a prestigious Lithuanian institution of higher education, the scientific and studies level of which conforms to the best European technical universities' level*".

The degree programme is a four year full-time, Bachelors programme in Fire Protection Engineering. The implementation of the programme started in 1992 and was registered in June 2002 and is offered by the VGTU Faculty of Civil Engineering (FCE) Department of Labour Safety and Fire Protection.

A previous group of experts assembled by SKVC evaluated the programme in May 2010. The programme was accredited until 31 December 2016 by decree of the director of SKVC No. 1-01-161 of 20 December 2010, with recommendations of changes stated by the SKVC experts team.

The SAR provided very helpful information on the programme aims and intended learning outcomes; the curriculum design; the teaching staff; the material resources; the study process and assessment; and programme management.

The material for the self-assessment report was prepared following the methodology approved by SKVC. The self-assessment of the study programme was conducted by the self-assessment group of 7 people, responsible for separate parts of the assessment.

1.4. The Review Team

The Review Team was assembled in accordance with the *Expert Selection Procedure*, approved by Order No 1-55 of 19 March 2007 of the Director of the Centre for Quality Assessment in Higher Education, as amended on 11 November 2011. The Review Visit to HEI was conducted by the team on 10th May, 2016.

1. Prof. Dr. Torgrim Log (team leader), Advisor Technical Safety at Statoil ASA, Professor of Technical Safety and Fire Dynamics at Department of Engineering, Stord/Haugesund University College (SHUC), Norway.
2. Assoc. Prof. Berit Andersson, Senior lecturer at Division of Fire Safety Engineering, Lund Institute of Technology, Sweden.
3. Prof. Dr. Csaba Forgács, Professor at the Department of Agricultural Economics and Rural Development, Corvinus University of Budapest, Hungary.
4. Prof. Dr. Linas Kliučininkas, Head of the Department of Environmental Engineering at Kaunas University of Technology, Lithuania.
5. Mr. Ignas Gaižiūnas, 3rd year student of Energy Physics at Faculty of Physics, Vilnius University, Lithuania.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The aims of the programme are well-defined and publicly available (in English as well) – they are published on the information system *Alma Informatica* and can be found on the University website, www.vgtu.lt.

The 1st programme goal is long and quite general and fit for its purpose anyway. The 2nd part of the goal stresses the importance of being able to interpret collected data and put it into the proper context and this is an essential part of the profession. The 3rd part of the 1st goal points at

the risks posed by hazardous substances and various materials in society of today and to be able to master these must be deemed as important. To be able to apply general university and engineering knowledge in engineering activities as stated in the 2nd goal must be seen as very important and highly relevant. Fundamental and specific subjects of safety engineering and general engineering are a natural base in the field of fire protection, so the second part of goal 2 is highly relevant. The 3rd part of the second goal points at the fact that a fire protection engineer has a very broad field of work and this is important to realize. To be able to maintain the professional competence after the exam is utterly important so the 3rd goal is much appreciated. The conclusion is that the programme aims are well defined, clear and publicly accessible and comply with the aims stated in GRFD §7. It also complies fully to the description in the Descriptor of Study Cycles.

Since the area of fire protection is a very comprehensive technical area the statement made in the learning outcomes presented must be deemed as very important. They present the base for the field of fire protection engineering. The individual task of producing and presenting a Bachelor thesis is a final achievement and is therefore important as a final stage of the education.

The learning outcomes under Point 2 are oriented towards humanistic and social sciences. The elements of natural sciences are limited to mathematics. This means that the part “*Knowledge of fundamental sciences, nature and its phenomena*” should be strengthened in the courses. This may be solved by more focus on fire fundamentals. Courses oriented towards general engineering sciences which are good and necessary are included. It also contains some elements of other topics such as language but these are of minor extent. Courses directed towards social and humanistic sciences are important parts of an education in engineering but it must be emphasized that courses in general engineering disciplines and natural sciences must be in focus. The courses on Engineering graphics and Mechanics of materials are much appreciated. Courses with focus on organizational structures as well as some fundamental courses in natural sciences these areas are both highly relevant. Courses with elements of skills in use of the latest information and communication technologies are important as well as abilities in working in teams.

The courses assigned to the areas under point 3 in the Programme Goals are all very relevant and necessary in an education for students in the area of fire protection engineering. It is also in this part that the course dealing with theory of combustion and extinguishing comes in. This is however only one course in an area which, to the opinion of the Review Team, should be central.

Possibilities for the students to acquire skills meeting the learning outcomes stated seem to be good and well catered for. The courses and themes should prepare the engineering students

well for the future and coming professional life since the courses in this area give general engineering skills which inherently demands ongoing learning. The relatively large amount of education given in the area of social sciences should give the student a good base to be able to fulfil the statement in the aims. The programme aims and learning outcomes are based on the academic and/or professional requirements, public needs and the needs of the labour market. The programme aims and learning outcomes are consistent with the type and level of studies and the level of qualifications offered. The name of the programme, its learning outcomes, content and qualifications offered are compatible with each other. Introducing a course in Fire Dynamics would also point towards the future needs of the Fire Protection professionals.

2.2. Curriculum design

The curriculum meets the requirements for the first study cycle according to Order of the Minister of Education and Science of the Republic of Lithuania on approval of the Descriptor of Study Cycles. The programme comprises 240 ECTS; of these 178 ECTS are subjects from the study field (legal requirement no less than 165 ECTS); 18 ECTS are general university study subjects (legal requirement no less than 15 ECTS). The specialization part consists of the university compulsory and student's optional subjects (31 credit), which are intended for specialisation in Fire Protection, and student's optional subjects (13 credits) (legal requirement not more than 60). Within the curriculum the final thesis occupies 15 ECTS (legal requirement no less than 12 ECTS) and 15 ECTS of practices are included (legal requirement no less than 15 ECTS).

The number of study subjects is not more than 7 each semester, covering 60 ECTS. This is in accordance with the legal requirements. The elements of repetition are not too many, which is good. During the first two semesters emphasis is on basics in philosophy, foreign languages, culture, fundamental chemistry, mechanics, physics and mathematics, engineering graphics and information technologies. A course in fire and rescue systems as well as professional practice is included. This seems relevant and a good start of the programme.

In semesters III and IV courses in applied physics and applied mathematics are included as well as courses in mechanics of materials, material science and building materials, and structural mechanics. During these semesters more subjects in the study field are introduced. These are organization of fire-fighting and rescue operations, building architecture and structures, electric engineering and fire protection of electrical equipment. An essential course within the field of studies is theory of combustion and extinguishing. Also during semester IV a period of industrial practice is included.

Semesters V and VI includes courses in thermodynamics, fire prevention in technological processes, management, fire safety automation, fluid mechanics and fire water supply, tactics of fire and rescue. A course named Integrated projects is also included, giving the student a solid background in business of dealing with a large project both theoretically and in practice. The purpose of the course is to provide a solid ground for the thesis work.

A large part of semesters VII and VIII are attributed to the Bachelor thesis. The design of this with three different courses leading towards the final graduation is appealing. Apart from these courses, the two final semesters include courses in culture, human factor in safety management, economics, law, psychological and medical training and fire-fighting appliances and machines. All areas are highly relevant for the future working areas for the students.

During the visit it could be concluded that the content of the subjects and modules is consistent with the type and level of the studies.

There are many courses aimed at social and humanistic sciences. This is highly relevant in many aspects. The focus on fundamental sciences, nature and its phenomena, especially fire dynamics with a focus on compartments fires and fire chemistry should be strengthened. There are many courses aimed at firefighting and fire rescue services and these are very relevant for the future working field of the students and the same goes for fire investigations but it is for example in connection to fire investigations that good knowledge of fire dynamics and fire chemistry is essential. Introducing a course in phenomena of Fire Dynamics, adjusted to BSc-level and including heat transfer, fluid flow, fire development and fire / compartment interactions, solves this issue. This would strengthen the learning outcome "Knowledge of fundamental sciences, nature and its phenomena". It would also be very beneficial as a background for several of the applied courses in extinguishing and fire control, fire investigations and general fire risk understanding. The gradual change from prescriptive codes towards more performance based codes in the European countries also requires more fundamental understanding of fire fundamentals and fire development. It can be concluded that the programme would benefit from strengthening the link between the basic thermodynamics and fundamentals of fire development. This could be done by incorporating a course in basic Fire Dynamic, including fire chemistry, as a natural development towards more performance based focus.

2.3. Teaching staff

4 professors (2 full-time) and 15 associate professors (7 full-time) are involved in the programme and all of them hold a PhD degree. 14 lecturers and 4 other persons are also involved in the courses. The faculty therefore meets the qualification requirements for BSc programme staff. The thesis work is supervised by qualified staff which should ensure the scientific level of

the thesis. A large portion of the staff has long experience in research and pedagogical areas. The research activities within the staff are also extensive in terms of publications documented on Thomson Reuters Web of Science publications with impact factor during the period 2011-2015.

A high portion of the teachers has worked with academic educations for many years and this implies a good stability for the programme. There has also been some new recruitment which ensures continuity in the teaching staff. There is a good stability in the group of teachers taking part in the programme.

The teachers of the *Fire protection* study programme have been involved in both Lithuanian and international research projects directly related to the reviewed study programme. The projects have been funded by Lithuanian State Studies Foundation, Research Council and economic entities. Teachers have also to some extent taken part in EU funded research, studies and development projects. This has resulted in numerous research papers and reports. They have also developed books and e-books for the fire protection profession. Several of these books are used at curriculum in the programme.

Teachers on the *Fire protection* study programme have taken part in the MVG/Erasmus academic staff mobility programme which is carried out annually by VGTU International Relations Office. This includes visits to the Fire Protection High School in Warsaw on research and studies issues (Poland), National Labour Institute of Sweden and Ostrava Technical University, Central Labour Safety Institute of Poland, Moscow Fire Protection Academy, etc. Teachers from these institutions also visit VGTU. Visitors from other foreign institutions also come to the Faculty of Civil Engineering to deliver lectures, which may be attended by all the students and teachers. However, it is the opinion of the Review Team that the teachers should be encouraged to better take advantage of the possibilities of international mobility exchanges that are available. Especially it would be good if more teachers got involved in the mobility programme not just the same teachers taking part.

The teachers' qualification requirements are defined in the VGTU Description of teachers, research workers and other researchers' contest for tenure and certification for minimum qualification requirements, approved on 17 June 2014 by VGTU Senate Order Amendment Nr. 73-2.1. On the basis of this description, the teaching staff is appointed to their position by public contest. Fixed-term employment contracts are signed for the five-year tenure. All teachers who are active in the programme have been assessed within the last five years. This ensures that the teachers' scientific and pedagogical qualifications are sufficient for the assurance of the quality of the studies.

2.4. Facilities and learning resources

The facilities and learning resources, including the Fire Research Centre and Fire Fighters Training School, libraries, teaching rooms, etc. are adequate and indeed very good, both in size and quality. There are a sufficient number of auditoriums for lectures, training and laboratory sessions. There are also sufficient reading rooms, etc. and all teaching premises meet the proper requirements and hygiene norms. The necessary computer and audio visual equipment associated with a modern HEI are present, and continually maintained, with access to the VGTU intranet and internet.

The library is facilitated for handicapped and visually impaired students and employees with stairs, gangways, etc. The library has more than sufficient capacity, including a 24/7 reading room, and gives the students and staff access to > 20 international scientific publications data bases, and all research journals relevant to a FP programme. The VGTU library cooperation with 8 foreign exchange partners (EU countries and the USA) for mutual borrowing further extends the literature access for students and staff, and shows that this is a state of the art modern HEI library. As the main library is in another building, 500 m away, it was noted positively that the library has a smaller filial very near the institute. This filial has most of the literature relevant for this particular program. Generally, the students do not use the library so much, partly due to working from home and partly due to the access to modern electronic search engines. But it is available on demand. The students have access to textbooks, books, periodical publications, databases, etc. relevant for the study programme. The teaching materials (textbooks, books, periodical publications, databases) are adequate and accessible, and as mentioned in the previous chapter, the staff has developed books and e-books to fill gaps in the international literature.

The Fire Research Centre has facilities for accredited testing, from small scale flash point analysers via fully instrumented test chambers including laser smoke measurements and paramagnetic O₂-analysers for calorific measurements and equipment for full scale certified wall section testing. They also have roof testing equipment, with hoods allowing for more purpose built fundamental research. The students use this equipment during their Thesis work. The Fire Fighters Training School also represents a potential "laboratory" for the students with a number of container fire enclosures for demonstrations, fire testing, fire investigations, etc. It has gyms, swimming pool for diverse rescue training and even a top of the line decompression chamber. The Fire Research Institute and the Fire Fighter School, in the vicinity of Vilnius, represent a unique resource for Thesis work, research projects and international research cooperation.

At VGTU, the FP BSc program is within the same institute, with its ergonomics equipment labs, etc. Studying working environment for the fire fighters, also in sharp situations, represents

numerous possibilities for the Thesis work and international research. The civil engineering laboratories are also very well developed and include testing of fire heated concrete beams as well. The institute has a small scale lab for demonstrations of several central fire parameters, such as open and closed cup flash point, vertical flame spread, burning rates and flame shapes of inclined small wooden objects, ovens for mass recordings during wood pyrolysis, etc. With some instrumentation, this laboratory may be upgraded to demonstrate several fundamental principles of fire dynamics.

The combination of a small scale in house fire lab, fully developed civil engineering lab, PC labs for fire risk modelling, access to social partners full scale accredited facilities at the Fire Research Centre and well-equipped Fire Fighters Training School, is impressive. Together with these physical facilities come the very cooperative social partners, who fully support the Bachelor programme.

When building stronger international relationships, the unique facilities represent valuable assets with respect to cooperation, EU grants, etc. By now, the testing and demonstrations have been directed towards standardised testing. The Review Group wants to challenge the faculty regarding using the facilities for more fundamental and ad hoc research. This requires some general instrumentation which, as an example, may be built during thesis work. Examples may be scale models, apparatus for studying fire plumes and fire plume ceiling interaction, sprinkler activation times, scale models for smoke movement, etc. The Review Team feels confident that the social partners would also appreciate such initiatives, and benefit from it.

In general:

All the facilities expected for a FP BSc are met regarding premises for studies, teaching and learning equipment, practice and teaching materials like books, etc. The combined facilities of small scale in house fire laboratory, well developed civil engineering lab, state of the art PC modelling software, full scale social partner facilities (research centre and very well equipped fire fighter school, both with enthusiastic leaders and employees) are quite unique, also in an international view. This combination allows for numerous future teaching and research possibilities.

2.5. Study process and students' performance assessment

The admission requirements to *Fire Protection* study programme at VGTU are clear and well founded. Students' admission requirements and rules are coordinated with Ministry of Education and Science of the Republic of Lithuania. Admission is being conducted in

accordance with the order established by LAMA BPO (Association of Lithuanian Higher Schools to Organize the Unified Admission).

There are stable numbers of admitted students to the study programme every year. In 2015 the highest competitive score of the students admitted to this study programme was 6,32 (SAR page 24, table 7) which is concerning as it is only about average. It must be noted that the mean score of admitted students in 2015 was only 3,76 (SAR page 24, table 7) and this is a very low score in comparison to nationwide results. This result clearly indicates that admitted students are not as advanced as stated in SAR but much below average students. There should be put some consideration on how to improve the situation and to attract better students.

The academic year is divided into autumn and spring semesters. During each semester students have independent study weeks. Individual work week provides students with the possibility to catch up with their studies in case they fall behind. The time table of the students is well designed. It is positive to see that there are efforts put into organizing introductory courses for new students. Various study methods are used in the course of studies which in turn promotes the development of different skills and reaching the learning outcomes. There are good proportions between independent and contact work. It is positive to see that VGTU is providing individual study for students when necessary. There seems to be a good availability of electronic resources for studies implemented by VGTU and teachers are using the advantages it provides. Students of the programme under the cooperation between VGTU and the Department of Fire Protection, the Fire Research Centre and the Fire Fighters Training School provides the possibility to use a specialized exercise field for practical development and a laboratory base for the final Thesis. Two times during their studies students have a one month long practice at the Department of Fire Protection. After finishing these practices students are already eligible to become firefighters. It is very positive to see that some of the teaching staff is inviting social partners to give some lectures. As a result, students are able to receive more applied knowledge. It was expressed by the students that some of the teaching staff is really good and puts a lot of effort in trying to understand their needs.

A medical examination is performed on students at the end of their studies (For students aiming at working as Fire officers with operational duties a good result in these is essential.). The students proposed that it could be beneficial to consider putting the medical examination at the beginning of the studies in order to provide students with a clear picture of their future possibilities.

There is a system implemented at VGTU of receiving feedback from the students on their studies. Students carry out surveys about the teaching staff at the end of each semester. Results

are later analyzed and actions taken when necessary. Students are also able to communicate their problems directly to the dean's office. Students might sometimes be discouraged to take part in surveys at the end of the semester as the results do make a little difference to them. It would be appreciated by the students if some sort of more formal system would be implemented to receive students' feedback and to improve the quality of the study process during the semester.

There is a variety of artistic activities that are cultivated at VGTU and students are welcome to join. In SAR there is given no real evidence of student participation in research or applied research activities. Sometimes students are invited to participate in scientific activities and projects if there are possibilities. Despite the possibilities for students of such activities no significant measures are indicated to encourage the participation of the students in research.

VGTU provides some possibilities for students to use mobility programs yet students do not tend to participate in such programs. The main reason for not participating in mobility programs is a fear to lose a job as many of students are working. During the visit, the Review Team met with some students having studied abroad for some time during their studies. Those students had a very good opinion about the mobility programs and the experience gained from them. However, there is a clear need of the students for wider possibilities and wider area of choices regarding mobility. There should be put some thought on creating more international relations regarding the fire protection field providing students with possibilities to get some foreign practices on how to tackle fire protection problems. Also, students should be better informed about existing possibilities to gain experience in foreign countries.

The VGTU has a very good website and information provided there is simple, understandable and easily found. It in turn allows students quickly and efficiently access necessary information such as teachers' contacts, scholarships, time tables and etc. Each group of first-year students is appointed a senior-year student-curator. This practice gets new students acquainted with the University and the study system quickly. Teachers give consultations to students according to a designated time table. There seems to be some well-founded practices implemented by VGTU Integration and Career Office at informing students about career possibilities.

It can be noticed that there is a high amount of student dropout at the study programme (SAR page 25, table 9). The dropout rate is approximately 40-45% meaning that almost half of the students do not finish their studies. There is also no information on what measures are being taken by the VGTU to prevent such high dropout rates. During the meetings with different target groups the Review Team received quite different explanations to this dropout rate. An effort should be made in analyzing the reasons for the high dropout rate of programme students. Also,

the indicated dropout rate is higher than usual even for the engineering study programmes so an effort in reducing it should be put as well.

There is a good system of financial support in VGTU. Students are eligible for scholarships for good academic results as well as good results in other areas such as cultural, public or sports activities. Students with difficult financial situation also get financial support from VGTU.

The assessment system of a particular subject is clearly described in the syllabus of each course (Annex 8.1). Students have access to study the descriptions and are aware of the assessment system. Several different assessment systems are used. It is appreciated by the students that tests are implemented during their study semesters. Generally, assessment in VGTU helps to distribute the student workload more evenly during the semester.

The students raised some concerns regarding evaluation of the study subjects *Building Architecture and Structure* and *Mechanics of Materials*. They told the Review Team that there are inconsistencies in these two particular study subjects regarding the level of material taught during the semester and the level of tasks posed during the exam, i.e. the exams were much harder than the contents explained during the study semester.

In a majority of the study subjects' descriptions of all the learning outcomes of a particular study subject are being evaluated using the same methods. This means that different learning outcomes are evaluated using the same principles. Evaluation methods used differ from study subject to study subject yet within the study subject they stay the same. Methods of studies also tend to be the same throughout the course of a particular study subject. Revision of the evaluation methods of different learning outcomes could be made.

There are also some inconsistencies between the average mark of the students during their studies and the average mark of their final thesis. It must be noted that in SAR (page 24, table 9) it is indicated that the average weighted score of students graduating in 2014 and 2015 is less than 8, yet the average score of their final thesis is 9,42 and in Annex 8.4 it is shown that only one student got 8 in the final thesis.

It is positive to see that the entire community of VGTU is taking measures to prevent academic dishonesty. Actions taken by VGTU Students' representative to discourage unfair behavior are very commendable.

Graduates from the programme have a particular place in the labor market as Fire protection specialist are only educated at VGTU. Many of the students have possibilities to work as firefighters during their studies and many of them do (from one third to half of the students are working). The situation is however changing as new regulations prohibit students to work as

firefighters without a Bachelor degree. During the visit at VGTU it was learned that almost half of the graduates from the programme are employed at the Lithuania Fire and Rescue Department. It was also learned that graduates find job easily after finishing their studies. Generally, VGTU does not have a detailed information or analysis on their graduates' employability. There could be put some consideration into creating a more formal system of tracking of graduates' employability.

2.6. Programme management

The Review Team got the impression of a well-run study programme. Senate regulations, and other similar regulations, are followed up on a regular basis. Information and data on the implementation of the programme are regularly collected and analysed. The responsibility for decisions and monitoring of the implementation of the programme are clearly allocated. The organised peer reviewing of the staff members is a good tool for improvement. Attendance in classes, discussions with students as well as the assessment of lectures' content, visual presentation of the material, teacher's communication with students, teaching methods, are organised. These issues indicate a thorough process for quality improvements. The student polls and the systematic follow up work after each semester also indicate efforts in quality improvements. The internal quality assurance measures are sufficiently effective and efficient. The students did, however, ask for mid-term evaluation as this would benefit them the same semester. The programme management is therefore asked to evaluate the possibility for mid-term topics evaluation. The frequent meetings with current social partners, such as the Department of Fire Protection and Rescue (DFPR) and the Fire Brigade Training School, ensure feedback and new ideas of improvement of the study programme. They confirmed being listened to when suggesting programme changes confirming evaluation and improvement involvement. The invitation of employers to involve in teaching and suggestions for final thesis topics shows the close partner cooperation. Regular meetings with alumni also add value to this picture. Information on the implementation of the programme is used for programme improvement.

Since the last assessment many improvements have been made, based on the recommendations suggested in the previous review. The objectives of the programme have been better specified and linked to the name of the programme and the skills of the graduates outlined in the diploma supplement. An analysis of the study subjects has also been done. In the last assessment the Review Team urged the teachers and students to take more advantage of the mobility programmes and to invite more lecturers from abroad. More invited teachers have given lectures at VGTU for the fire protection students. To make more students take part in mobility

programmes is clearly a problem since many students work in parallel to their studies and this makes it difficult for them to leave for a longer period. A language problem is also stated as a reason for students not going abroad. The Review Team had a meeting with a group of students and found that many of them are quite good at English so the alleged language problem should not be exaggerated. New teachers with a doctoral degree have been employed since the last revision which should strengthen the staff.

III. RECOMMENDATIONS

1. Consideration should be given to introduce more fundamental skills in the core knowledge of fire fundamentals, primarily Fire Dynamics.

2. It is suggested to increase the efforts of strengthening the mobility and international contacts for both the students and the staff.

3. Reasons of student's dropout rate should be carefully analyzed and appropriate measures taken.

4. Implementation of a system for monitoring the careers of graduates is highly recommended.

IV. EXAMPLES OF EXCELLENCE (GOOD PRACTICE)

The combined facilities of small scale in house fire laboratory, well developed civil engineering lab, state of the line PC modelling software, full scale social partner facilities (Fire Research Centre) and very well equipped Fire Fighter Training School, both with enthusiastic leaders and employees, are quite impressive. It is the best combination of facilities and learning resources ever seen by the Review Group's international fire and safety experts.

V. SUMMARY

The programme aims and learning outcomes are based on the academic and professional requirements, public needs and the needs of the labour market. They are consistent with the type and level of studies and qualifications offered. The courses prepare the students well for the future professional life. There are many courses aimed at firefighting and fire rescue services very relevant for the future working field of the students. The programme will, however, benefit from strengthening the link between the basic thermodynamics and fire development. This could be done by introducing a course in basic Fire Dynamic. The students get laboratory skills at the in-house small scale fire laboratory and expand their knowledge at the civil engineering laboratory. There are very good facilities at, and good cooperation with, the Fire Research Center (FRS) and the Fire Fighter Training School (FFTS). The practical training facilities are well established and well organized and represent a unique set of assets for the study programme, ongoing and future international research cooperation.

The faculty meets all qualification requirements. A large portion of the staff has long experience in research and pedagogical areas. Their research activities are extensive in terms of scientific publications directly related to the study programme. They are involved in both Lithuanian and international research projects. Some staff members take part in the MVG/Erasmus academic staff mobility programs.

The admission requirements are clear and well founded. The students have independent study weeks providing the possibility to catch up in case they fall behind. The time table is well designed. Various teaching methods are used in the courses which in turn promotes the development of different skills and reaching the learning outcomes. There are good proportions between independent and contact work. It is positive to see that VGTU provides individual study for students when necessary. There is good availability of electronic resources. The students use the specialized exercise fields at the Fire Research Centre and the Fire Fighters Training School (FFTR) for teaching, practical development and as a laboratory base for the final Thesis. Two times during their studies students have a month practice at the FFTR. After finishing these practices students were already eligible to become firefighters. It is very positive to see that teaching staff invites social partners to give applied knowledge lectures.

Revision of the evaluation methods of different learning outcomes is preferred to introduce more variation. The dropout rate should be analysed and measures for reducing it should be introduced. This could be remedied by working actively to increase the attraction of students

with a higher minimum score at admission. As the majority of the students have jobs alongside studying few students travel abroad on mobility programs. The mobility cooperation with foreign institutions for students and staff could be strengthened. The students that did go abroad were, however, very satisfied.

The Review Team got the impression of a well-run study programme. Senate regulations, and other similar regulations, are followed up on a regular basis. Information on the implementation of the programme are regularly collected and analysed. Peer reviewing of the staff members (attendance in classes, discussions with students as well as the assessment of lectures' content, visual presentation of the material, teacher's communication with students, teaching methods) are organised and shows a thorough process for quality improvements. The internal quality assurance measures are efficient. The students did, however, ask for mid-term evaluation as this would benefit them the same semester. The frequent meetings with current social partners ensure feedback and new ideas of improvement of the study programme. They are listened to when suggesting programme changes confirming evaluation and improvement involvement. They also frequently suggest interesting thesis topics. Regular meetings with alumni also add value to this picture.

The study program is unique and needed for the country and it holds the necessary standard. Students, graduates, social partners and employers were positively evaluating the study program. It is also evaluated positively by the Review Team.

VI. GENERAL ASSESSMENT

The study programme *Fire Protection* (state code – 612H12001) at Vilnius Gediminas Technical University is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

| No. | Evaluation Area | Evaluation of an area in points* |
|-----|--|----------------------------------|
| 1. | Programme aims and learning outcomes | 3 |
| 2. | Curriculum design | 3 |
| 3. | Teaching staff | 3 |
| 4. | Facilities and learning resources | 4 |
| 5. | Study process and students' performance assessment | 3 |
| 6. | Programme management | 3 |
| | Total: | 19 |

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is exceptionally good.

| | |
|---------------------------------|------------------------------|
| Grupės vadovas: Team leader: | Prof. Dr. Torgrim Log |
| Grupės nariai: Team members: | Assoc. Prof. Berit Andersson |
| | Prof. Dr. Csaba Forgács |
| | Prof. Dr. Linas Kliučininkas |
| | Mr. Ignas Gaižiūnas |

**VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETO PIRMOSIOS PAKOPOS
STUDIJŲ PROGRAMOS *GAISRINĖ SAUGA* (VALSTYBINIS KODAS – 612H12001)
2016-07-25 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-176 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Vilniaus Gedimino technikos universiteto studijų programa *Gaisrinė sauga* (valstybinis kodas – 612H12001) vertinama **teigiamai**.

| Eil. Nr. | Vertinimo sritis | Srities įvertinimas, balais* |
|-----------------|--|-------------------------------------|
| 1. | Programos tikslai ir numatomi studijų rezultatai | 3 |
| 2. | Programos sandara | 3 |
| 3. | Personalas | 3 |
| 4. | Materialieji ištekliai | 4 |
| 5. | Studijų eiga ir jos vertinimas | 3 |
| 6. | Programos vadyba | 3 |
| | Iš viso: | 19 |

* 1 – Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

2 – Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

3 – Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

4 – Labai gerai (sritis yra išskirtinė)

<...>

IV. GEROSIOS PRAKTIKOS PAVYZDŽIAI

Gana nemažą įspūdį daro VGTU mažų bandinių gaisrinės saugos laboratorija, gerai įrengta Civilinės inžinerijos laboratorija, moderni PC modeliavimo programinė įranga, platus socialinių partnerių tinklas (Gaisrinių tyrimų centras ir labai gerai įrengta Ugniagesių gelbėtojų mokykla ir entuziastingi šių padalinių vadovai bei darbdaviai). Tai geriausias materialinių išteklių derinys, kokį vertinimo grupės tarptautiniai gaisrinės saugos ekspertai kada nors yra matę.

V. SANTRAUKA

Studijų programos *Gaisrinė sauga* tikslai ir numatomi studijų rezultatai pagrįsti akademiniais ir (ar) profesiniais reikalavimais, visuomenės ir darbo rinkos poreikiais. Jie atitinka studijų rūšį, pakopą ir kvalifikacijų lygį. Studijų dalykai padeda studentams gerai pasirengti būsimam profesiniam gyvenimui. Dėstoma daug su gaisrine ir gelbėjimo darbų sauga susijusių

dalykų, labai aktualių studentams, kurie ateityje dirbs šioje srityje. Tačiau programa būtų veiksmingesnė sustiprinus joje bazinės termodinamikos ir gaisrų dinamikos ryšį. Tai galima padaryti įtraukus į programą Gaisrų dinamikos pagrindus. VGTU mažų bandinių gaisrinės saugos laboratorijoje studentai įgyja laboratorinių įgūdžių, o Civilinės inžinerijos laboratorijoje gilina savo žinias. Gaisrinių tyrimų centre yra gera įranga, su šiuo centru ir su Ugniagesių gelbėtojų mokykla glaudžiai bendradarbiaujama. Sukurta stipri ir gerai organizuota praktinio mokymo bazė yra vertingas turtas šiai programai įgyvendinti, vykstančiam ir būsimam tarptautiniam bendradarbiavimui tyrimų srityje.

Dėstytojai atitinka visus kvalifikacijos reikalavimus. Didelė jų dalis turi ilgalaikę patirtį mokslinių tyrimų ir pedagogikos srityse. Jų mokslo tiriamoji veikla yra intensyvi, turint omenyje tiesiogiai su šia studijų programa susijusias mokslines publikacijas. Dėstytojai dalyvauja Lietuvos ir tarptautiniuose mokslinių tyrimų projektuose, kai kurie – MVG/Erasmus akademinio personalo judumo programose.

Priėmimo į studijas reikalavimai yra aiškūs ir pagrįsti. Organizuojamos studentų savarankiškų studijų savaitės, užtikrinančios studentams galimybę įveikti žinių spragas. Tvarkaraštis sudarytas tinkamai. Studijų eigoje taikomi įvairūs mokymo metodai, o tai padeda ugdyti įvairius gebėjimus ir pasiekti numatomus studijų rezultatus. Geras savarankiško ir kontaktinio darbo santykis. Pozityvu tai, kad VGTU prirėmęs suteikia studentams individualaus mokymosi galimybę. Lengvai prieinami elektroniniai išteklių. Studentai naudojami Gaisrinių tyrimų centro ir Ugniagesių gelbėtojų mokyklos teikiamomis specializuotos praktikos vietomis praktiniam tobulėjimui ir kaip laboratorine baze rengiant baigiamąjį darbą. Studijų eigoje studentai du kartus atlieka mėnesio trukmės praktiką Ugniagesių gelbėtojų mokykloje. Baigę šią praktiką, jie jau turi teisę dirbti ugniagesiais. Pagirtina, kad dėstytojai kviečiasi socialinius partnerius skaityti paskaitas, suteikiančias praktinių žinių.

Siekiant didesnės įvairovės, pageidaujama, kad būtų persvarstyti įvairių numatomų studijų rezultatų vertinimo metodai. Reikėtų analizuoti nubyrėjimo lygį ir nustatyti jo mažinimo priemones. Nubyrėjimo problemą būtų galima spręsti pritraukiant daugiau studentų, kurių stojimo balas aukštesnis už vidutinį. Kadangi daugelis studentų kartu ir dirba, ir studijuoja, tik nedaugelis dalyvauja judumo programose (vyksta į užsienį). Būtų galima stiprinti studentų ir dėstytojų bendradarbiavimą su užsienio institucijomis judumo srityje. Studentai, kurie buvo išvykę į užsienį, yra labai patenkinti.

Vertinimo grupei susidarė įspūdis, kad ši studijų programa yra gerai organizuota. Reguliariai įgyvendinami Senato taisyklės ir kiti panašūs reglamentai. Nuolat renkama ir nagrinėjama informacija apie programos įgyvendinimą. Organizuojamas dėstytojų tarpusavio vertinimas (lankymasis paskaitose, aptarimai su studentais, paskaitų turinio vertinimas, vaizdinis medžiagos pateikimas, dėstytojų bendravimas su studentais, mokymo metodai), kuris rodo, kad vyksta gilus kokybės gerinimo procesas. Vidinės kokybės užtikrinimo priemonės yra veiksmingos. Tačiau studentai pageidauja vidurio laikotarpio vertinimo, nes tai jiems duotų naudos tą patį semestrą. Dažni susitikimai su dabartiniais socialiniais partneriais užtikrina grįžtamąjį ryšį ir naujas idėjas dėl studijų programos tobulinimo. Atsižvelgiama į socialinių partnerių pasiūlymus dėl studijų programos ir vertinimo metodų patobulinimų. Socialiniai partneriai dažnai pasiūlo įdomias baigiamųjų darbų temas. Nuolat organizuojami susitikimai su absolventais taip pat kuria pridėtinę vertę.

Studijų programa *Gaisrinė sauga* yra unikali ir šaliai reikalinga, ji atitinka būtiną standartą. Studentai, absolventai, socialiniai partneriai ir darbdaviai teigiamai vertino šią programą. Vertinimo grupė taip pat teigiamai ją įvertino.

<...>

III. REKOMENDACIJOS

1. Reikėtų apsvarstyti, ar neįtraukti naujų dalykų, visų pirma Gaisrų dinamikos, siekiant stiprinti pagrindines fundamentaliųjų gaisrinės saugos dalykų žinias.
2. Rekomenduojama daugiau pastangų skirti studentų ir dėstytojų judumo didinimui ir tarptautinių ryšių plėtojimui.
3. Reikėtų atidžiai išnagrinėti studentų nubyrejimo priežastis ir imtis tinkamų priemonių.
4. Labai rekomenduojama įgyvendinti absolventų karjeros stebėsenos sistemą.

<...>

Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

Vertėjos rekvizitai (vardas, pavardė, parašas)