



agency for science and higher education

**REPORT
OF THE EXPERT PANEL
ON THE
RE-ACCREDITATION OF
THE FACULTY OF GEOTECHNICAL ENGINEERING
UNIVERSITY OF ZAGREB**

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MAMFORCE



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INTRODUCTION

The Agency for Science and Higher Education (the Agency) is an independent legal entity with public authority, registered in the court register, and a full member of the European Quality Assurance Register for Higher Education (EQAR) and European Association for Quality Assurance in Higher Education (ENQA).

All public and private higher education institutions are subject to re-accreditation, which is conducted in five-year cycles by the Agency, in accordance with the Act on Quality Assurance in Science and Higher Education (Official Gazette 45/09) and subordinate regulations, and by following *Standards and Guidelines for Quality Assurance in the European Higher Education Area* (ESG) and good international practice in quality assurance of higher education and science.

The Agency's Accreditation Council appointed an independent Expert Panel for the evaluation of the Faculty of Geotechnical Engineering, University of Zagreb.

Members of the Expert Panel:

- Professor Irina Artemieva, Department of Geosciences and Natural Resource Management, University of Copenhagen, Kingdom of Denmark, Panel chair,
- Senior Lecturer Linus Zhang, Faculty of Engineering, Lund University, Kingdom of Sweden,
- Doc. dr. sc. Sanja Dugonjić Jovančević, Faculty of Civil Engineering University of Rijeka, Republic of Croatia,
- Dr. sc. Jasmina Lukač Reberski, Croatian Geological Survey, Republic of Croatia,
- Dorotea Starčević, student, Faculty of Civil Engineering University of Rijeka, Republic of Croatia, student.

During the site visit, the Expert Panel held meetings with the following stakeholders:

- Management,
- Working group that compiled self-evaluation report,
- Students,
- Alumni,
- Heads of departments,
- Full-time teaching staff,
- Assistants,
- Heads of doctoral programmes and leaders of research projects,
- Representatives of the business sector, potential employers.

The Expert Panel members had a tour of the work facilities, laboratories, library and an IT classroom, and classrooms, and attended sample lectures, at one of which they held a brief Q&A session with students.

In accordance with the site visit protocol, the Expert Panel examined the available additional documents and study programme descriptions (learning outcomes).

The Expert Panel drafted this Report on the re-accreditation of the Faculty of Geotechnical Engineering, University of Zagreb, on the basis of the Faculty of Geotechnical Engineering, University of Zagreb, self-evaluation report, other relevant documents and site visit.

The Report contains the following elements:

- Short description of the evaluated higher education institution,
- Brief analysis of the institutional advantages and disadvantages,
- List of institutional good practices,
- Detailed analysis of each assessment area, recommendations for improvement and quality grade for each assessment area,
- Detailed analysis of each standard, recommendations for improvement and quality grade for each standard,
- Appendices (quality assessment summary by each assessment area and standard, and site visit protocol),
- Summary.

In the analysis of the documentation, site visit to the Faculty of Geotechnical Engineering University of Zagreb and writing of the Report, the Expert Panel was supported by:

- Viktorija Juriša, coordinator, ASHE,
- Mia Đikić, assistant coordinator, ASHE,
- Ivana Rončević, interpreter at the site visit, ASHE.

On the basis of the re-accreditation procedure conducted, and with the prior opinion of the Accreditation Council, the Agency issues a following accreditation recommendation to the Minister for Higher Education and Science:

1. **issuance of a confirmation on compliance with the requirements** for performing the activities, or parts of the activities
2. **denial of license** for performing the activities, or parts of the activities
3. **issuance of a letter of expectation** with the deadline for resolving deficiencies of up to three years. A letter of expectation can include the suspension of student enrolment within a set period.

The accreditation recommendation also includes a quality grade of a higher education institution, and recommendations for quality improvement.

SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

NAME OF HIGHER EDUCATION INSTITUTION: The Faculty of Geotechnical Engineering
University of Zagreb

ADDRESS: Hallerova aleja 7, Varaždin

DEAN: Prof. dr. sc. Ranko Biondić

ORGANISATIONAL STRUCTURE:

- Department of Science,
- Department of Geotechnics,
- Department of Hydrotechnics,
- Department of Environmental Engineering.

STUDY PROGRAMMES:

- Undergraduate university study programme Environmental Engineering,
- Environmental Engineering Graduate university study programme,
- Postgraduate (doctoral) university study programme Geo-Engineering and Water Management.

NUMBER OF STUDENTS:

- BS programme - 302
- MS programme - 53

NUMBER OF TEACHERS:

- 21 full-time employed academic staff (full, associate and assistant professors)

SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

The Faculty of Geotechnical Engineering (GFV) is a public institution of higher education and a constituent unit of the University of Zagreb (UniZG). It carries out university study programmes (undergraduate, graduate and postgraduate) in the scientific area of technical sciences, the field of interdisciplinary technical sciences as well as scientific and high-tech work of technical, natural and interdisciplinary sciences.

For several decades, the GFV has been a centre of higher education in the technical field in the northern part of the Republic of Croatia. It is one of three constituent units of the University of Zagreb located outside Zagreb and it is the only faculty in the technical field with a licence for carrying out university study programmes in Varaždin.

Higher education at the GFV started in 1969 when the High Technical Mining Geo-Research School was founded. In the 1970s it changed its name into the High Geotechnical School and became part of the Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb. Because of a large number of a students and a need for more space, the GFV moved into a new building in Hallerova aleja 7 (former Hinkovićeveva 7), where it is located today. Even then a transition from geoenvironmental and mining towards basic construction disciplines of geotechnical and hydrological engineering started.

A further step in the transition happened in 1990 when the high school became the Faculty of Geotechnical Engineering, which was the result of the development of its own faculty staff, equipment, knowledge and experience. The GFV has been an independent constituent unit of the University of Zagreb since then.

Between the 1990s and 2005, the GFV has undergone a further transition by focusing on environmental research and protection. The number of faculty staff increased and according to the principles of the Bologna Declaration the undergraduate and the graduate study programmes of Geoenvironmental Engineering with three fields of study was implemented in 2005. That is the result of connecting the tradition of the GFV (fields of study - Geotechnical and Hydrological Engineering) as well as the further focus on environmental research and protection (field of study - Environmental Engineering).

An increasing focus on environmental protection and management in an engineering sense brings a new transition, that is to say a focus of study programmes on environmental engineering. As a result of this, the Faculty is going to become one of the central institutions of higher institutions that carry out study programmes of Environmental Engineering at the University of Zagreb and in the whole country.

In 2012, the undergraduate university study programme of Environmental Engineering was implemented as a substitute programme for an undergraduate study programme of Geoenvironmental Engineering. In 2015, the graduate university study programme of Environmental Engineering was implemented as a substitute for a graduate study programme of Geoenvironmental Engineering.

The undergraduate university study programme of Environmental Engineering is common for all students (there are no study fields) and lasts for three years. During the study students gain knowledge of basic natural and technical sciences, which are prerequisites for understanding the basic principles of environmental engineering.

The graduate university study programme of Environmental Engineering lasts for two years and it is carried out through three fields of study: Environmental Geoengineering, Water Management and Environmental Management. **The Environmental Geoengineering** study field enables students to participate in planning, designing, organizing and carrying out projects and studies such as conservation, monitoring, protection and remediation of the environment, environmental impact assessments of planned interventions, field research works for environmental and geotechnical purposes as well as expert jobs in construction engineering and mining. **The Water Management** study field deals with the issue of water resources and equal attention is paid to the quantity and quality of drinking water, wastewater issues, their disposition and remediation, the complex field of energy utilization of water resources as well as amelioration and systems and regulation of watercourses. **The Environmental Management** study field is an interdisciplinary course that includes an engineering approach to identification, prevention and mitigation of unfavourable impacts on the environment. A broad spectrum of knowledge received in the course enables students to solve a range of environmental challenges such as waste management, energy transition, soil remediation, assessment of a product's lifetime, environmental impact assessment, inspectorial supervision of environmental protection and similar.

Over the past several years, we were actively preparing a postgraduate doctoral university study programme of Environmental Engineering, which has been finished and it is currently being reviewed at the University of Zagreb. We expect a positive review and the beginning of its delivery in the academic year 2018 / 2019. The doctoral study programme of Environmental Engineering is organized in such a way that the courses are divided into five modules and students choose courses depending on the topic of their doctoral dissertation.

The GFV also participates in delivering an International Postgraduate Joint Doctoral Study Programme "Geo-Engineering and Water Management". At the moment, GFV is at the turning point and it is being changed into a new programme, which will be more attractive in the Central European region. The GFV also participates in delivering the postgraduate specialist university study programme of Ecoengineering as one out of thirteen constituent units of the University of Zagreb.

BRIEF ANALYSIS OF THE INSTITUTIONAL ADVANTAGES AND DISADVANTAGES

ADVANTAGES OF THE INSTITUTION

1. Promising direction and topic for study programmes (environmental protection), interdisciplinarity;
2. Good curriculum of courses at BS and MS levels;
3. Small size of the Faculty which makes internal interaction easy and the atmosphere friendly;
4. Getting the critical mass of laboratory equipment;
5. Good connections with the county and private business in the area;
6. Good climate at the Faculty at all levels.

DISADVANTAGES OF THE INSTITUTION

1. The Faculty has strategy, but fails with tactics.
2. Many critical deficiencies from the previous evaluation were not resolved.
3. Drop-out of students is extremely high.
4. Internationalization is low, with a low level of international exchange both for students and staff.
5. Publications in international, especially high ISI journals, are extremely few.
6. Reward system for excellence in teaching, academic performance and fund raising is insufficient (except for publication activities).
7. Low commitment to teaching and academic excellence by a part of senior professors; the absence of any mechanism to engage low-performing senior academic staff.
8. Teaching is not fully student-oriented.
9. Little, if anything, is done to improve teaching competences of junior teachers.
10. Poor link between theory and practice in teaching.
11. Remote location in isolation of other faculties.
12. Extremely tight budget, with little if any external fund-raising.

LIST OF INSTITUTIONAL GOOD PRACTICES

EXAMPLES OF GOOD PRACTICE

1. Attempts to increase international visibility, but unfortunately by a very small group of people.
2. Attempts to improve internationalization.
3. Application for the Faculty name change.
4. Collaboration with the local civil service and private sector.
5. Reward system for publication activities.
6. Initiative on additional courses in Physics, Maths and Chemistry for poorly-performing students.
7. Involvement of students in practical training and field work (but still insufficient at BS level).

ANALYSIS OF EACH ASSESSMENT AREA, RECOMMENDATIONS FOR IMPROVEMENT AND QUALITY GRADE FOR EACH ASSESSMENT AREA

I. Internal quality assurance and the social role of the higher education institution

Analysis

GFV prepares specialists in a broad range of environmental engineering topics, which are in demand in society, with a steadily growing national and international interest in environmental protection. Internal quality assurance system exists, but is incomplete, with major weaknesses related to transparency in academic recruitment plan and the reward system for professional performance. The major recommendations from 2012 re-accreditation have not been addressed. The drop-out rate for students is still unacceptably high. Mobility of teaching staff and students hardly exists. No changes to the BS study programme were made to increase practical training. Academic support to junior researchers has not been improved. Support to employees in career development remains very low. Publication strategy did not improve and high-profile publications in recognized journals are nearly absent.

Recommendations for improvement

Criteria for long-term results should be clearly formulated. External peers and stakeholders should be involved in the Faculty development, and their role should be formalized. The major critics and specific recommendations for improvement should be addressed seriously, and the corresponding actions should be taken. Drop-out rate of students should be reduced significantly. The link between the decisions, the surveys and data on the drop-out rate and unemployment should be strengthened. Study programmes at both BS and MS levels should include sufficiently increased practical component. The Faculty should increase academic support to junior researchers, implement their formal pedagogical training, and increase mobility of academic staff and students. Publication strategy should be revised and practical measures should be found to raise the proportion of high-profile publications in recognized journals. GFV should create an Advisory Board composed of external experts, with a significant number of foreign high-profile experts.

Quality grade

Minimum level of quality

II. Study programmes

Analysis

GFV delivers experts in the new discipline. The profession “Environmental Engineer” is not yet formally regulated in Croatia. In this situation, justification for study programmes and student admission quotas for the study programmes of Environmental Engineering cannot be assessed formally. The learning outcomes are not well defined and the information on syllabus and on the web is incomplete and not updated regularly. In some courses the knowledge level and study outcome are too low. Student practice is low, especially at BS level, and the amount of laboratory work is insufficient. There is some overlap with study programmes at other faculties. GFV has no lifelong learning programmes.

Recommendations for improvement

The standards for the profession and the qualification should be formulated and formally regulated at the national level, and GFV should collaborate on this with the authorities. The learning outcomes should be defined according to the Croatian qualification framework, with a detailed description of the knowledge level and study content outcome. The drop-out of students should be reduced, without lowering the study level. GFV should publish up-to-date versions of study programmes, also in English. GFV should collaborate with other faculties where similar study programmes exist, to ensure their minimal overlap but maximum collaboration in delivering similar subjects. Student practice should be broadened and increased, especially at BS level, including doubling the time for laboratory work. GFV should develop lifelong learning programmes in environmental engineering, to improve competence of teaching and academic staff, to secure additional income to GFV, and to increase its national and international visibility.

Quality grade

Minimum level of quality

III. Teaching process and student support

Analysis

Information on admission and continuation criteria is published on the website, but not in English. The criteria for internal students and those coming from other HEIs are inconsistent. Information for foreign students is incomplete. Enrolment quotas appear totally inadequate, lead to an extremely high student drop-out rate, do not match the number of successfully graduating students, and do not seem to be linked to the labour market. Students have sufficient support from tutors and administrative staff, but much

of information is provided on an individual basis. Teaching staff has no pedagogical training, which is especially critical for teaching assistants who expressed the wish to have such training. Students are poorly informed on their study options abroad, mobility options, and career options. There is a problem with recognition of ECTS credits gained abroad. Foreign experts do not take part in any teaching activities. Student feedback is analysed but the feedback on the exams is incomplete, the student appeal system does not exist. Cases of potential unethical behaviour are handled individually, procedure does not exist, plagiarism is not checked. Support to students with disabilities exists, but the building has no proper installations.

Recommendations for improvement

Web pages should be regularly updated and provide all necessary information, also in English. The Faculty should reduce admission quotas at least by 30% for both undergraduate and graduate studies, to reduce student drop-out rates, and to ensure that admission criteria are the same for all groups of students. Teaching should be student-oriented and include a broader spectrum of methods. The Faculty should organize formal teaching-pedagogical education for teachers, especially for junior staff. The Faculty should initiate a regular programme for inviting foreign experts to give short courses. The Faculty should encourage, promote and advise students about mobility, and should open a career planning centre at GFV. It should broaden and enhance collaboration with ALUMNI and private sector, e.g. by introducing “job fair” days. There should be a formal and clear procedure for student appeals, for handling cases of unethical behaviour. Plagiarism check should be introduced. The building should be adapted for students with disabilities.

Quality grade

Minimum level of quality

IV. Teaching and institutional capacities

Analysis

GFV has no transparent action plan for employment, including job openings in relation to expected retirements, and no strategy for human resource management. New positions are not well advertised internationally, and do not receive international applications. While the Faculty has a small group of bright, active young researchers, there is also a small group of senior academic staff with a poor performance. There is no mechanism to promote hard-working staff and to engage low-performing academic staff into activities. International mobility of the teaching staff hardly exists and is largely limited to short-term conferences and workshop visits. The system of sabbatical leaves does not exist and is not planned. Recently GFV has introduced the award system to recognise excellence in publication activity, which remains very low by international

standards, with almost no publications in high-ISI international peer-review journals. GFV does not have practice for academic seminars and colloquia for teaching and academic staff, and has no strategy to secure guest lectures from high-profile scientists. Laboratory facilities are modest but appropriate; however, the library facilities are totally inadequate. Funding is heavily dependent on the state funding, with extremely little external funding.

Recommendations for improvement

GFV should develop a transparent action plan for advancements and re-appointments, and for recruitment of foreign experts and expats. A separate strategy should be developed for promotion of young academic and teaching staff, and for activating non-performing staff. GFV should initiate regular seminars and attract national and foreign experts as guest lecturers. Publication activity should be improved, in terms of quality and quantity. An action plan should be developed for sabbatical leaves. GFV should develop a strategy and mechanism to boost fund-raising from external sources and to bring the scientific level of the academic staff to the international competence level. GFV should develop an action plan for regular updates of PC and laboratory equipment, and for new systematic and regular library acquisitions.

Quality grade

Minimum level of quality

V. Scientific/artistic activity

Analysis

GFV has significantly improved scientific research in the last five years. However, the overall situation remains unsatisfactory at the absolute scale when compared to international standards. GFV increases efforts in meeting the social and labour market needs, however the ALUMNI and stakeholders are not fully involved. Research profile remains weak, publications are mostly in low quality journals, and national and international visibility is insufficient. International high-profile experts are not coming to GFV, and the Faculty is not open to new ideas and knowledge, and does not have clear guidelines for quality.

Recommendations for improvement

GFV must have an effective award and quality control system, including a mechanism to activate the non-producing staff. It should set up a clear strategy to enrol more motivated, better-qualified students, and to recruit international, young talent to ensure the sustainable development of GFV. GFV should place strong focus on inviting international professors to visit GFV and give guest lectures; on increasing both incoming and outgoing mobility at all levels. Publication strategy should be targeted on

internationally recognized, higher IF journals, and courses on academic writing and English should be introduced for all the staff. GFV must, as the first priority, create an international Advisory Board with participation of international experts.

Quality grade

Minimum level of quality

DETAILED ANALYSIS OF EACH STANDARD, RECOMMENDATIONS FOR IMPROVEMENT AND QUALITY GRADE FOR EACH STANDARD

I. Internal quality assurance and the social role of the higher education institution

1.1. The higher education institution has established a functional internal quality assurance system.

Analysis

The Faculty strategy has been under development, and now has a more adequate vision and strategy. The Faculty made a SWOT analysis of their implementation based on the analysis of the data they have collected. However, the criteria on how to assess the results of the long-term planning are not clear.

GFV has the Committee of Quality Assurance (CQA) which includes representatives of the Faculty management, academic/teaching staff, technical/administrative staff and student representative, but without any external members.

The Faculty has started to implement the system of rewards for academic/teaching staff for a high publication performance. However, the reward system is incomplete and does not cover all groups of employees.

Feedback from the surveys among the employees and students is not fully used in the strategy for the Faculty development. There is no transparent action plan for employment, including job openings in relation to retirements, and no strategy for human resource management.

Recommendations for improvement

CQA should have a broader representation of the members as an important asset to the quality assurance system. It is strongly recommended that CQA will include external experts, not employed by the Faculty (e.g. from ALUMNI, private sector, and regional civil organizations) to ensure the Faculty development is in line with its strategy and vision and with the changing social needs.

The sources of information on quality factors should be broadened, including external peer reviews. The link between the decisions, on one side, and the surveys among the employees and students and data on the drop-out rate and unemployment, on the other side, should be strengthened.

The Faculty should develop a clear and transparent strategy for recruitment and professional advancement and make it publicly available.

The reward system should be extended and broadened to cover all groups of employees and all levels of students, and all major types of professional activities.

Quality grade

Minimum level of quality

1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.

Analysis

GFV has been evaluated 5 years ago. The major recommendations for improvement have not been addressed. It included the following points:

1. To reduce significantly drop-out rate of students, in particular by introducing additional admittance tests – not implemented, drop-out rate still stays at around 60%; additional tests were not introduced and instead the admittance requirements for Physics and Maths were lowered;
2. To increase mobility of teaching staff and students – not implemented, the mobility still barely exists, although some formal actions were made;
3. To increase practical training at the BS level – not implemented, no changes to the BS study programme were made;
4. To increase support to junior researchers (TAs) by granting them (co)mentorship at the Faculty – almost not implemented, basically none of them have a (co)mentor at the Faculty;
5. To increase support to employees in career development – not implemented, there are barely any changes;
6. To increase publications in recognized journals – not implemented, such publications barely exist.

Recommendations for improvement

To address in full all of the points above.

Quality grade

Unsatisfactory

1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.

Analysis

GFV uses an anonymous web-based system developed by the University of Zagreb for reporting unacceptable behaviour. If such cases happen, they are solved on an individual basis by the Teaching Board.

GFV has appointed the Ethics Committee, but its role is unclear.

Recommendations for improvement

1. To develop standard procedures for handling cases of unacceptable academic, professional, and personnel behaviour at all levels, from students to the Faculty members.
2. To start using plagiarism detection tools.

Quality grade

Satisfactory

1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).

Analysis

GFV has a web-site, which it not updated regularly. The English web-site does not match the Croatian web-site, and its major information has not been updated for nearly 3 years.

The web-site has no information on the research projects by the GFV and their results, hindering public information on its activity and role in societal development.

The admission information is presented on internet satisfactory and provides all what is needed.

GFV arranges Open Door days.

Recommendations for improvement

1. Web-site information should be updated regularly;
2. English web-page information should, for major parts, correspond to the Croatian web-page;
3. Web-site should include information on GFV activities, such as of relevance to the social needs and of interest to the private sector and academic community.

Quality grade

Minimum level of quality

1.5. The higher education institution understands and encourages the development of its social role.

Analysis

GFV prepares specialists in a broad range of environmental engineering topics, which are in demand in society, with a steadily growing national and international interest in environmental protection.

GFV has established contacts and collaborates with regional municipal bodies and private sector on environmental issues.

GFV started publishing 2.5 years ago its own peer-review professional journal on various aspects of environmental engineering.

Recommendations for improvement

1. To increase public visibility of GFV and societal awareness on the environmental problems, in general and regionally, through public media (internet, radio/TV), public lectures (including schools and other universities in Croatia), public open-table discussions;
2. To broaden collaboration with the local civil community.

Quality grade

Satisfactory

II. Study programmes

2.1. The general objectives of all study programmes are in line with the mission and strategic goals of the higher education institution and the needs of the society.

Analysis

- The current study programmes and the Development Strategy from 2013 to 2017, indicate that general goals of all study programmes are in line with the mission and strategic goals of GFV. The main goal is to fill the gap at the market where the need for a new profession (environmental engineering) is clear. Strategic goals are the improvement of life quality and development of human resources in environmental protection, rational land management and sustainable use of natural resources.
- The profession “Environmental Engineer” is not yet formally regulated in Croatia, since it does not exist in the Croatian profession register. Further on, the Croatian Employment Service document concerning <Recommendations for the enrolment and scholarship policy> does not recognize environmental engineers. In this situation, justification for study programmes and student admission quotas for the study programmes of Environmental Engineering cannot be assessed formally. These justifications are presently based purely on the decision of the Faculty.

Recommendations for improvement

1. The standards for the profession and the qualification should be formulated and formally regulated. GFV should approach national administrative authorities for establishing national solutions.
2. Once the formal regulations are established, the studying outcomes should be aligned with the profession standards.

Quality grade

Minimum level of quality

2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.

Analysis

- The description of the overall knowledge and competences that students achieve in different courses is incomplete. According to available information, student achievements are generally expected at the level of remembering and understanding basic facts and processes, with little focus on application, analysis and assessment, giving an overall impression that the BS programme may not be fully aligned with the Croatian qualification framework.
- Analysis of the graduate study programmes also cannot confirm that the competences stated in the Croatian qualification framework are achieved,

because learning outcomes are very imprecise and undefined. Substantial part of students finds the level of teaching too low.

Recommendations for improvement:

1. The learning outcomes should be defined according to the Croatian qualification framework, with a detailed description of the knowledge level and study content outcome. They should comply with the 6th and the 7th level of the Croatian qualification framework for the undergraduate and graduate study programmes (aligned with the CroQF and EQF level descriptors), comply with professional and international requirements, and ensure that the programme is up to date.
2. There should be formal mechanisms for assessing and ensuring that through the study programme learning goals are aligned with learning outcomes.

Quality grade:

Minimum quality grade

2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.

Analysis

- GFV has an extremely high drop-out rate of students, with many students delayed in studies due to failure at exams (mostly Mathematics and Physics).
- GFV tries to improve the situation by introducing pre-courses for courses that students have difficulties passing.

Recommendations for improvement

1. The higher education institution should continually revise and improve the teaching process on the basis of evidence on the achievement of the intended learning outcomes. This should include changes to lectures and other forms of teaching, including more student-centred learning methods, with feedback to those who fail at tests.
2. The institution should include more pre-courses at the high-school level of knowledge for students who did not have such courses at high school.
3. The Faculty revises the study programmes in terms of teaching methods and mechanisms of assessing the knowledge and competences, making the alignment between intended learning outcomes, teaching methods and a form of the competence tests.

Quality grade

Minimum quality grade

2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.

Analysis

- GFV has a strategy to revise and change the study programme and it should be done systematically and by involving stakeholders and students. New study programmes are in general alignment with the strategic goals and needs at the local, regional and national level.
- Although the study programmes partially overlap with several other study programmes within the same university, the intention of the Faculty is to profile their study programme in a new, more specific direction of environmental engineering.

Recommendations for improvement

1. The institution has good relations with external stakeholders, and should include them in the study programme changes as external consultants.
2. GFV should publish up-to-date versions of study programmes that cannot be found on their web page at the moment. The information should also be available in English, to enable the internationalization of the study at both levels, undergraduate and graduate.
3. GFV should work in contact with other faculties where similar study programmes exist, to ensure their minimal overlap but maximum collaboration in delivering similar subjects.

Quality grade

Satisfactory

2.5. The higher education institution ensures that ECTS allocation is adequate.

Analysis

The actual student workload and the ECTS credits are in general alignment, with no serious deviation.

Recommendations for improvement

Changes in ECTS should reflect, when needed, the study programme revision, and use feedback from stakeholders and external professionals in the environmental engineering.

Quality grade

Satisfactory

2.6. Student practice is an integral part of study programmes (where applicable).

Analysis

GFV did not implement the recommendations from the previous re-accreditation panel to establish student practical work at BS level. Student practice exists at the MS level, where it is a part of some courses and of MS theses, ensuring the achievement of some intended learning goals.

Recommendations for improvement

1. GFV should increase student practice, and include it in every course where it is applicable. Hours spent on laboratory work should be at least doubled.
2. GFV should include field work into study programmes at BS and MS level (with active assignments), and establish short visits to regional companies dealing with different aspects of the environmental protection. Student practice may be offered as an optional course at undergraduate study to allow students closer cooperation with labour market.

Quality grade

Minimum quality grade

2.7. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution, and social needs.

Analysis

There is no evidence for any lifelong learning programmes in past or present.

Recommendations for improvement

The Faculty should develop lifelong learning programmes in environmental engineering, to improve skills, knowledge, and competences of teaching and academic staff, and students.

The programme would also provide an additional income to GFV and will increase its national and international visibility.

Quality grade

Unsatisfactory

III. Teaching process and student support

3.1. Admission criteria or criteria for the continuation of studies are in line with the requirements of the study programme, clearly defined, published and consistently applied.

Analysis

- Both general criteria exist, and they are published on the web pages. However, the web pages are not regularly updated.
- There are different admission criteria for students who have transferred from other higher education institutions, which is not fair to them.
- The Faculty did not work on improving the admission criteria since the previous re-accreditation.
- The Faculty organizes an Open Day to improve student recruitment.

Recommendations for improvement

1. Web pages should be regularly updated and provide all necessary information.
2. The Faculty should work on improving the admission and continuation criteria through the analysis of the exam pass rates and the student drop-out rates.
3. Admission criteria should be adjusted to solve the problem with a high student drop-out rate and the low exam pass rate.
4. The Faculty should level the admission criteria for their own students and those students who transfer from other GFVs.

Quality grade

Minimum level of quality

3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.

Analysis

- GFV regularly conducts analysis and gathers information on student progress, but does not use this information to make the improvements nor changes to improve student progress in studies. The exceptions are pre-courses started recently; they are very useful and very well accepted by students.
- There is still an unacceptably high ratio of students who drop out, and the exam pass rate is very low at Maths and Physics.
- The measures taken to increase the pass rates and decrease the drop-out rate are insufficient and not effective.

Recommendations for improvement

1. The Faculty should take serious measures and start activities to increase both the pass rates and the completion rates.
2. Pre-courses for courses with a low pass rate should be conducted.

Quality grade

Unsatisfactory level of quality

3.3. The higher education institution ensures student-centred learning.

Analysis

1. A part of teaching is based on laboratory work where students do exercises. At some courses students are taken on the field work. However, students are not satisfied with the number of hours spent in the laboratory and in the field, which they find to be too little.
2. Students are not enough motivated and not actively involved in teaching. Teachers are willing to adapt their teaching methods to a diverse student population.
3. Various teaching methods are not used, and generally teachers do not have formal teaching-pedagogical education.
4. Students do not have feedback and they do not see any changes or improvements after the conducted surveys.

Recommendations for improvement

1. Students should be actively involved in teaching through use of various teaching methods that encourage research-based learning, problem solving, creative and critical thinking. There should be more group projects (on undergraduate study programme) and more field and laboratory work.
2. The Faculty should organize formal teaching-pedagogical education for teachers, especially for junior staff.
3. The Faculty should consider students' opinion and adapt teaching in cooperation with students.

Quality grade

Minimum level of quality

3.4. The higher education institution ensures adequate student support.

Analysis

- Students are informed about available support services, and teachers are willing to give them necessary information. Students have enough tutors and sufficient consultation hours. Teachers adapt their teaching to students with learning difficulties and disabilities. Students have a good support from the library staff.
- Students are not enough supported and encouraged in outgoing and incoming mobility. Students have problems with a lack of information about their career opportunities.

Recommendations for improvement

1. The Faculty should encourage, promote and advise students about mobility.
2. A representative of external stakeholders from the Croatian Employment Service recommends that students should have an Office for career consulting because

they are lost, and they do not have enough information about career opportunities.

Quality grade

Satisfactory level of quality

3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.

Analysis

- Teachers are willing to help such students, and they adapt their teaching to students from vulnerable and under-represented groups.
- The building is not adapted to students with disabilities.

Recommendations for improvement

Facilities in the building should be adapted for students with disabilities to enable them to take part in all needed activities.

Quality grade

Satisfactory level of quality

3.6. The higher education institution allows students to gain international experience.

Analysis

- Students have an opportunity to complete a part of their study abroad, but they do not have enough information about this option and they are not sufficiently encouraged. The Faculty has signed mobility contracts with several countries, but this did not result in increasing mobility.
- The recognition of ECTS credits gained abroad is not ensured, and this is one of the reasons why students are not very interested in mobility.
- Students are insufficiently exposed to foreign literature, foreign experiences and practices, and have no possibilities to work with foreign professors and colleagues.
- The Faculty organizes presentations by students who stayed abroad, and this is a good way to promote mobility.

Recommendations for improvement

1. The Faculty should work on promoting mobility and encouraging students.
2. The problem with the recognition of ECTS credits gained abroad has to be solved.
3. The Faculty should initiate a regular programme for inviting foreign experts to give short courses at different levels. The programme should be open and visible.

Quality grade

Minimum level of quality

3.7. The higher education institution ensures adequate study conditions for foreign students.

Analysis

- Incoming mobility is insignificant.
- Web pages are available only in Croatian, so foreign students do not have access to information.
- Some courses can be delivered in English, and some teachers are willing to organize separate classes for foreign students. This has been done in the past when several foreign students came. The rationale for this approach can be questioned, because it puts extra teaching load on the course responsible, and isolates Croatian and foreign students during studies.

Recommendations for improvement

1. The Faculty should become more attractive for foreign students through advertisements and should ensure foreign students have all necessary information in a foreign language.
2. It would be better to avoid separating of foreign and Croatian students in order to facilitate interaction between students, ensure their collaboration and exchange of international experiences.

Quality grade

Minimum level of quality

3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.

Analysis

- GFV collects information on student performance according to the regulations.
- Feedback to students regarding the evaluation results is incomplete.
- The appeal procedure does not exist.
- Plagiarism is not checked.
- Nearly no one in the teaching staff has pedagogical training, including teaching assistants. This clearly hampers development of skills of the teaching staff both in teaching and assessment methods.

Recommendations for improvement

1. To organize pedagogical training, especially for junior teaching staff, e.g. in the form of 2-5 day workshops.
2. To implement plagiarism checking tools.
3. To establish a clear and open procedure for student appeals.

Quality grade

Minimum level of quality

3.9. The higher education institution guarantees the issuance of Diploma Supplements and adequate qualification information.

Analysis

Diplomas and Diploma Supplements are in accordance with regulations, contain all necessary information and are available both in Croatian and in English.

Recommendations for improvement

None.

Quality grade

High

3.10. The higher education institution is responsible for the employability of graduates.

Analysis

- GFV has far too high admission quotas (120 undergraduate students and 69 graduate students). Due to a high drop-out of undergraduate students (57-76%) and the lack of incoming students with BS degrees from other HEIs, the seats at graduate studies are filled only by 30-43%.
- Most (and probably all) BS graduates enrol as graduate students and therefore do not enter the job market. The unemployment rate between MS graduates increased from 9% in 2014 to nearly 30% in the next two years. Information about places of employment of former graduates is not collected.
- GFV does not provide career planning service to graduates and information on job options is provided only on an individual basis.
- Contact with ALUMNI exists, but mostly with those employed at GFV, and the resources of ALUMNI employed externally in public and civil sector are not used.

Recommendations for improvement

1. To reduce admission quotas at least by 30% for both undergraduate and graduate studies;
2. To open career planning centre at GFV and foster information delivery about career options through web-site, emails and posters;
3. To make a database with information about employment of former graduates;
4. To broaden and enhance collaboration with ALUMNI and private sector, e.g. by introducing "job fair" days.

Quality grade

Minimum level of quality

IV. Teaching and institutional capacities

4.1. The higher education institution ensures adequate teaching capacities.

Analysis

- The student/tutor ratio is good and provides good teaching capacities.
- Teaching load appears appropriate, although on the high end for teaching assistants.
- Teaching staff has no pedagogical training, including teaching assistants, who expressed a strong wish to have such training, e.g. as a 2-5 days long workshop.
- Teaching staff responsible for 2 courses do not seem to be qualified according to the national regulations.

Recommendations for improvement

1. To introduce obligatory formal pedagogical training for all junior teaching staff including assistant professors.
2. To reduce teaching load of PhD students and provide them with academic support (tutors from the Faculty).
3. To ensure all course holders qualify to this role.

Quality grade

Satisfactory

4.2. The higher education institution has an objective, transparent and excellence-based procedure of teacher recruitment.

Analysis

- There is no transparent action plan for employment, including job openings in relation to expected retirements, and no strategy for human resource management.
- New positions are not well advertised internationally, and do not receive international applications. They also do not get applications from expats. A part of the problem appears to be more general and related to previous teaching expertise, so that foreign experts have difficulties meeting the national criteria. Perhaps this should be adjusted to allow for recruitment of international experts.

Recommendations for improvement

1. To develop a transparent action plan for new recruitment and professional advancement in relation to expected retirements.
2. To develop and implement a strategy on recruitment of foreign experts and expats.

Quality grade

Minimum level of quality

4.3. Teacher advancement and re-appointment is based on objective and transparent procedures.

Analysis

- No criteria for professional promotion were presented. The overall strategy in HR management and advancement remains unclear, and it is unclear if it exists.
- The Faculty has a small group of bright, active young researchers. It is their publications which make the general publication statistics of the Faculty do not look a failure. There should be a long-term transparent recruitment strategy for professional promotion of these young researchers, which does not exist at present.
- The Faculty has a small group of senior academic staff with a very poor performance. The absence of any mechanism to engage low-performing senior academic personnel into activities and limited possibilities for rewarding excellence are dangerous for the Faculty climate.

Recommendations for improvement

1. To develop and make public the strategy for advancement and re-appointment in general, and for the promotion of young bright academic and teaching staff, separately.
2. To develop mechanisms either for activating non-performing staff, or for promotion of excellence by transferring professional benefits from non-performing to top-performing staff. In particular, sabbatical leaves may be an option to promote young active researchers, while placing their teaching load on poorly performing colleagues.

Quality grade

Minimum level of quality

4.4. The higher education institution provides support to teachers in their professional development.

Analysis

- Teaching staff is knowledgeable and dedicated at all levels. However, according to feedback at all levels, GFV has neither strategy nor practise for the recognition and motivation of excellence in teaching. Not all teachers have the same level of support of their courses, which results in partially disproportional teaching load.
- GFV does not have strategy for professional development of teachers. Most, if not all, of the teaching staff have no pedagogical preparation, and junior teachers (TAs) lack teaching expertise.
- GFV participates in ERASMUS+/BESTSDI international projects and allows participation of teaching and research staff in national and international conferences. However, administrative and information support of such activity is at the minimal level (e.g. waiving of some part of conference travel expenses). International mobility of teaching staff is not at the level of international high-profile institutions and is largely limited to short-term conference and workshop visits. The system of sabbatical leaves does not exist and is not planned.

- Scientific productivity of teaching staff over the past 5 years remains very low by international standards, and publications in high-ISI international peer-review journals are basically absent, especially among several members of the senior teaching staff. Recently GFV has introduced the award system to recognise excellence in publication activity.
- GFV does not have practise for academic seminars and colloquia for teaching and academic staff.

Recommendations for improvement

1. To request the certified attendance of specialized pedagogical courses by all PhD students, postdocs and junior teaching staff; to request certificates of pedagogical training from all newly-employed teaching staff; to provide opportunities for the teaching staff to improve their competence in teaching methods;
2. To develop a strategy for motivation and promotion of teaching excellence and to implement it in practice;
3. To increase international mobility of teaching and research staff, in particular for long-term stays;
4. To involve international high-profile experts in teaching through a series of regular invited lectures and short courses at undergraduate, graduate, postgraduate and professional levels;
5. To involve international high-profile experts in co-supervision of PhD projects;
6. To ensure that assessment committees of PhD defences include international high-profile experts;
7. To increase scientific visibility of GFV through an increased number of publications by all staff members in high-ISI international peer-review journals;
8. To ensure adequate support by teaching assistants to all courses;
9. To establish regular, at least monthly, seminars with participation of all academic staff and graduate students.

Quality grade

Minimum level of quality

4.5. The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific/artistic activity.

Analysis

- GFV has secured a critical mass of laboratory equipment. Some laboratories are newly equipped, other are at a reasonable technical level. Work facilities are appropriate.
- IT service is adequate, at least no problems were mentioned by anyone. However, there were student complaints that PCs are old, have insufficient RAM, and slow processors which does not allow students to work on them on their projects. Therefore, students have to work on their own computers.

Recommendations for improvement

1. Funds should be allocated for regular updates of PC and laboratory equipment.
2. GFV may encourage ALUMNI, public sector, and county administration to contribute to targeted updates of infrastructure.

Quality grade

Satisfactory

4.6. The library and library equipment, including the access to additional resources, ensure the availability of literature and other resources necessary for a high-quality study, research and teaching.

Analysis

Library is hosted in a user-friendly hall, however it also seems to serve as an IT class.

- Students can access the library until early afternoon on work days, and they have assistance of a professional librarian. However, the number of book shelves is extraordinary small to accommodate the amount of professional literature expected for a high profile GFV.
- The book collection gives an impression of random acquisitions, is poor and very small. A large part of the collection is old, with many titles irrelevant to GFV profile, and in different European languages, which students do not know. There are few recent titles from leading professional publishers, but systematic collection of professional and teaching books does not exist. The number of paper copies of textbooks is limited to very few, which would be totally inadequate in the absence of e-resources.
- GFV has access to electronic professional library resources through the Ministry services, which includes access to WoS, Science Direct, etc., and through the University which provides access to full texts of selected professional journals. However, printed versions of professional journals in related disciplines are nearly absent.

Recommendations for improvement

1. To develop strategic plan for new systematic and regular library acquisitions;
2. To increase significantly the diversity of titles of professional literature in the library, in particular old and new “classical” books and textbooks by leading international experts in related disciplines. This should be done through a systematic campaign during which the list of most important titles (ca. 50-100) should be identified and acquired. This can be achieved through a closer cooperation with ALUMNI and private sector.
3. To increase significantly the amount of professional literature in English, both books and textbooks;
4. To ensure subscriptions to leading high-ISI international professional journals;
5. To foster development of the electronic library of major international professional books.

Quality grade

Unsatisfactory

4.7. The higher education institution rationally manages its financial resources.

Analysis

- GFV is transparent in providing major information on its income and expenditures. GFV has an unbalanced budget for both income and expenditures. Income is heavily dominated by the guaranteed Ministry contribution. Very limited effort is made to raise independent funding from competitive sources. This results in the overall tight budget where almost no financial resources are left beyond the wage payments and maintenance costs.
- About 71% of funding comes from the state agencies, ca. 12% from scholarships and fees, and ca. 17% from the private sector and rent. Income from scientific projects and cooperation is nearly non-existing.
- Expenditure structure is ca. 77% to salary payments, ca. 12% maintenance costs, ca. 7% travel and training costs, and only ca. 4% goes to equipment costs (laboratories, IT, office equipment). No budget is allocated to library costs.

Recommendations for improvement

On the income side:

1. To extend and expand national and international professional network to boost GFV involvement into small-scale and large-scale academic and business funding options;
2. To develop a strategy for application for external academic research funding nationally and internationally, including large-scale EU funding schemes;
3. To develop a strategy and mechanism to boost fund raising from the national and international academic sector through support to applications and by bringing the scientific level of the academic staff to the international competence level;
4. To develop a strategy and increase fund raising from private and civil service sector through increasing public visibility of GFV and by involving ALUMNI.

On the expenditure side:

1. To increase international mobility;
2. To allocate funds for attracting high-profile academic visitors;
3. To develop strategy of financial awards and promotion for academic and teaching excellence at all levels, starting from the student level;
4. To increase funding to the instrument pool, including IT, and to develop strategy for its renewal;
5. To make a strategy and allocate funds for the campaign and regular library acquisitions.

Quality grade

Minimum level of quality

V. Scientific/artistic activity

5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.

Analysis

GFV has currently 21 higher academic staff members (5 professors, 6 Assoc. Prof. and 10 Assistant Prof.). Based on our observations, GFV has made remarkable improvements in scientific research over the last five years. However, at the absolute scale when compared to international institutions, the overall situation remains unsatisfactory.

Positive:

- The ratio of publications in the “highest category” increased from 0.64/p/yr (67/21/5) for the last 5 years to 1.1 /p/yr for 2017-2018.
- GFV established a working procedure to encourage and promote the scientific research (monetary awards or acknowledgements for best performance in high IF journal or for a large number of publications).

Negative:

- High portion of senior academic staff has a very low publication rate (in some cases zero over 5 years).
- The general quality of the publications is of low standards in terms of journal IF, citations and h-index.
- Every two years, GFV is a co-organiser of an International Symposium on Waste Management, but it did not lead to significant publications in connection to it.
- GFV’s efforts to get its own doctoral programme are too slow.

Recommendations for improvement

1. GFV must have an effective award and quality control system. The academic staff as a whole should cooperate more closely. A mechanism to activate the non-producing staff should be established.
2. Publication strategy should be targeted on internationally recognized, higher IF journals in order to increase the overall quality.
3. International presence (conference, workshop, etc.) should be largely increased.
4. An academic writing course should be introduced for all the staff. A regular English course with focus on scientific writing would be beneficial.

Quality grade

Minimum level of quality

5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.

Analysis

- There is an increased effort by GFV in meeting the social and labour market needs. Changing the Faculty name to reflect the international trends is one of the positive directions.
- There has been a number of joint or collaborating research projects involving public or private sectors contributing to knowledge transfer and enhanced social relevance.

- These efforts are not well integrated to maximize the synergy effects for increased career development, fund raising and alumni networking.

Recommendations for improvement

1. GFV should implement targeted efforts for increasing its visibility at regional, national and international arena.
2. To build up an effective strategical network to boost fund-raising; the start-ups and spin-off; establish PPP partnership.
3. GFV should try to “educate” the top politicians to promote the environmental thinking.

Quality grade

Satisfactory level of quality

5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.

Analysis

GFV got some progress during past years in terms of increased activities in acknowledgement of its work. But these are in general insufficient and of a low standard compared to the international, and to some extent, the national level. This is of course closely related to an insufficient scientific publication activity that needs to be enhanced.

Recommendations for improvement

1. GFV should place more focus on increasing the numbers of high IF publication; on more active participation in international missions such as conferences; on inviting international professors to visit GFV and give guest lectures; on increasing both incoming and outgoing mobility at all levels.
2. GFV must, as the first priority, create an international Advisory Board! The choice of the Board members should be done in consultancy with national and international experts.

Quality grade

Minimum level of quality

5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.

Analysis

- It is positive that GFV has adopted a Scientific Research Strategy and Vision for development and started to implement them with the ambition to be “a leading research institution in the area of environmental engineering”.
- The basic infrastructure (both hardware and software) is at an acceptable level except for IT and library, which are at an unacceptable level.

Recommendations for improvement

1. Create a long-term strategy for infrastructure investment.
2. Revise and enhance research profile regularly and consistently.
3. Speed up the process of getting the doctoral programme.

Quality grade

Satisfactory level of quality

5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.

Analysis

- There has been a large gap between the scientific and professional activities and the actual achievements from these activities. The achievements need to be lifted significantly to reach the international level.
- It is not evident that the latest research output and the latest international results are systematically incorporated in current teaching.

Recommendations for improvement

1. Set up a clear strategy to enrol more motivated, better-qualified students, who in the long run, will bring GFV to a higher level.
2. Set up a clear strategy to recruit international, young talent to ensure the sustainable development of GFV.

Quality grade

Minimum level of quality

APPENDICES

1. Quality assessment summary - tables

<i>Quality grade by assessment area</i>				
<i>Assessment area</i>	Unsatisfactory level of quality	Minimum level of quality	Satisfactory level of quality	High level of quality
<i>I. Internal quality assurance and the social role of the higher education institution</i>		X		
<i>II. Study programmes</i>		X		
<i>III. Teaching process and student support</i>		X		
<i>IV. Teaching and institutional capacities</i>		X		
<i>V. Scientific/artistic activity</i>		X		

<i>Quality grade by standard</i>				
<i>I. Internal quality assurance and the social role of the higher education institution</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
1.1. The higher education institution has established a functional internal quality assurance system.		X		
1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.	X			
1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.			X	
1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).		X		
1.5. The higher education institution understands and encourages the development of its social role.			X	

<i>Quality grade by standard</i>				
<i>II. Study programmes</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
2.1. The general objectives of all study programmes are in line with the mission and strategic goals of the higher education institution and the needs of the society.		X		
2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.		X		
2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.		X		
2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.			X	
2.5. The higher education institution ensures that ECTS allocation is adequate.			X	
2.6. Student practice is an integral part of study programmes (where applicable).		X		
2.7. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution, and social needs.	X			

Quality grade by standard

<i>III. Teaching process and student support</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
3.1. Admission criteria or criteria for the continuation of studies are in line with the requirements of the study programme, clearly defined, published and consistently applied.		X		
3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.	X			
3.3. The higher education institution ensures student-centred learning.		X		
3.4. The higher education institution ensures adequate student support.			X	
3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.			X	
3.6. The higher education institution allows students to gain international experience.		X		
3.7. The higher education institution ensures adequate study conditions for foreign students.		X		
3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.		X		
3.9. The higher education institution guarantees the issuance of Diploma Supplements and adequate qualification information.				X
3.10. The higher education institution is responsible for the employability of graduates.		X		

Quality grade by standard

<i>IV. Teaching and institutional capacities</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
4.1. The higher education institution ensures adequate teaching capacities.			X	
4.2. The higher education institution has an objective, transparent and excellence-based procedure of teacher recruitment.		X		
4.3. Teacher advancement and re-appointment is based on objective and transparent procedures.		X		
4.4. The higher education institution provides support to teachers in their professional development.		X		
4.5. The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific/artistic activity.			X	
4.6. The library and library equipment, including the access to additional resources, ensure the availability of literature and other resources necessary for a high-quality study, research and teaching.	X			
4.7. The higher education institution rationally manages its financial resources.		X		

Quality grade by standard

<i>V. Scientific/artistic activity</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.		X		
5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.			X	
5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.		X		
5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.			X	
5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.		X		

2. Site visit protocol

Reakreditacija Geotehničkog fakulteta Sveučilišta u Zagrebu / Re-accréditation of the Faculty of Geotechnical Engineering University of Zagreb

Adresa/Address: Hallerova aleja 7, Varaždin

PROTOKOL POSJETA/VISIT PROTOCOL

Utorak, 5. lipnja 2018./
Tuesday, 5th June 2018

9:00 – 10:00 Sastanak s Upravom (*bez prezentacija*) / Meeting with the Management (*no presentations*)

10:00 – 10:15 *Interni sastanak članova Stručnog povjerenstva / Internal meeting of the panel members*

10:15 – 11:00 Sastanak s radnom grupom koja je priredila Samoanalizu /Meeting with the working group that compiled the Self-Evaluation

11:00 – 12:00 *Sastanak članova Stručnog povjerenstva (Analiza dokumenata)/Internal meeting of the panel members (Document analysis)*

12:00 – 13:00 Sastanak sa studentima (otvoren sastanak za sve studente) / Meeting with the students (open meeting)

13:00 – 14:30 *Radni ručak Stručnog povjerenstva / Working lunch*

14:30 – 15:15 Sastanak s članovima Udruga diplomanata Geotehničkog fakulteta Sveučilišta u Zagrebu / Meeting with the *Alumni*

15:15 – 15:20 Pauza / Break

15:20 – 16:00 Sastanak s vanjskim dionicima - predstavnicima strukovnih i profesionalnih udruženja, poslovna zajednica/poslodavci, stručnjaci iz prakse, organizacijama civilnog društva, vanjski predavači/Meeting with external stakeholders -representatives of professional organisations, business sector/industry sector, professional experts, non-governmental organisations, external lecturers

16:00 - 17:00 Organizacija dodatnog sastanka o mogućim otvorenim pitanjima prema potrebi / Organisation of additional meeting on potential open questions if needed

Srijeda, 6. lipnja 2018./
Wednesday, 6th June 2018

8:00 – 9:00 Sastanak s voditeljima studijskih programa / Meeting with the heads of study programmes

9:00 – 10:00 *Sastanak članova Stručnog povjerenstva (Analiza dokumenata) / Internal meeting of the panel members (Document analysis)*

10:00 – 11:00 Sastanak s nastavnicima (u stalnom radnom odnosu, koji nisu na rukovodećim mjestima) / Meeting with full-time employed teachers (open meeting)

11:00 – 11:05 Pauza/ Break

11:05 – 11:45 Sastanak s asistentima / Meeting with teaching assistants

11:45 – 11:50 Pauza / Break

11:50 – 12:30 Sastanak s prodekanom za znanost i prodekanom za međunarodnu suradnju / Meeting with vice dean for science and vice dean for international cooperation

12:30 – 13:00 Sastanak s voditeljima znanstvenih projekata / Meeting with the heads of research projects

13:00 – 14:30 *Radni ručak članova Stručnog povjerenstva / Working lunch*

14:30–16:30 Obilazak Fakulteta (knjižnica, uredi studentskih službi, ured međunarodne suradnje, informatička služba, predavaonice) i prisustvovanje nastavi / Tour of the Faculty (library, student services, international office, IT services, classrooms) and participation in teaching classes

16:30– 16:45 Organizacija dodatnog sastanka o mogućim otvorenim pitanjima prema potrebi / Organisation of additional meeting on potential open questions if needed

16:45 – 17:30 *Interni sastanak članova Stručnog povjerenstva, priprema za završni sastanak / Internal meeting of the panel members, preparation for Exit meeting*

17:30 – 17:45 Završni sastanak s Upravom / Exit meeting with the Management

SUMMARY

GFV is a young faculty which found an important niche in research and education by introducing a new profession in Croatia – Environmental Engineering. The topic is of a growing international interest and societal needs, and as such secures a good position of GFV on the international and national scene. However, the profession is not yet officially recognized by authorities in Croatia, which creates problems with teaching curricula, admission quotas for students, and employment of graduates.

Four key problems may be identified in the present operation of GFV.

1) Unacceptably high drop-out rate of students. It causes unnecessary overload of teaching staff and financial burden to the country. It also drains away young generation from the labour market. This problem is closely related to the admission quotas, which seem to be set up arbitrarily, and apparently in order to secure an easy GFV financing. Teaching level seems to be too low at some courses, and theory is largely isolated from practice.

2) Unacceptably low academic level and low academic performance of most of the staff by international standards. This creates problems with low academic productivity, in particular by several senior members, and the existing system does not allow to get rid of them and to create academic jobs for talented hard working junior staff. There is no clear strategy for academic advancement, although recently GFV started introducing a reward system for excellence in publications.

3) Nearly complete absence of external fund-raising. Low academic performance hampers external fund-raising from the academic sector, which barely exists at all. External funding from private, regional and economic sector is also extremely low. As a result, nearly all income is spent on wages and running costs, without any strategy for growth and development. A lack of external funding is apparently compensated by an increase in student admission quotas.

4) Nearly complete absence of internationalization. Foreign visits and mobility of staff and students are basically absent, which deprives the Faculty of the opportunities to gain new knowledge and experience, with little understanding of how their performance compares to the international standards. GFV's recent efforts to sign several international agreements did not increase international mobility, neither in, nor out.

These four problems are all interlinked, and seem to boil down to two:

- Low academic performance and
- Lack of comparison to the international standards on a daily basis.

Solutions should be found therefore along these two lines.

1) As a critical solution, the panel strongly recommends **to establish an International Advisory Board at GFV**. Such boards are common in most Centres of Excellence worldwide. They usually include 5-10 international high-profile experts, who control how organization functions and provide regular advice on strategy and action plans. They usually operate remotely, with regular (1-2 times a year) visits to the organization.

2) To ensure quality control of academic performance it is recommended that international experts are also formally involved with PhD defences, and PhD supervision. **There should be an action plan for regular (at least bi-weekly) guest lectures by international experts**. Perhaps the Ministry or University of Zagreb should introduce small grants to support these activities.

The forced regular presence of many international experts in different capacities at GFV will promote international collaboration, mobility, and will increase the level of academic performance, productivity, and create grounds for future successful fund-raising.

3) The last point concerns the recruitment policy, which should also target attracting foreign experts and expats. However, **there is also need in a new strategy for dedicated recruitment of young national talented researchers**, which may require help by the Ministry or University of Zagreb. It is practiced in different countries in different ways, but the general idea is that there is a national competition for a limited number of special grants for young researchers (10-15 years after PhD). These grants (3-4 years) provide funding for conference travels, short stays abroad, employment of a PhD student, and include substantially reduction of the teaching load.

4) We also find that the system of a PhD study in Croatia is not optimum for high professional performance, and it critically differs from the international practice. Usually PhD students are enrolled for 3 (rarely 4) years, during which they contribute to teaching. However, teaching load is never 50%, and usually is around 20-25% with no teaching during the last year of the PhD study. An enrolment for 6 years as in Croatia, makes the project dispersed and the efforts unfocused. The results obtained during the first years may become scientifically outdated by the time of completion. It appears that with the same money involved it is possible **to have pure PhD positions for 3 years with very little teaching** and a different type of junior positions as teaching assistants and without PhD degree as an ultimate goal. This would select the best candidates for a PhD degree and ensure their efficient concentrated thesis work and fast professional growth, which will help to create a young national elite.

The proposed activities cannot be implemented by GFV alone, without the organizational and financial help from the Ministry or University of Zagreb. However, with a little funding, they may provide an efficient solution with visible results in a 5 year term.

We hope that our recommendations will be of help.

On our side, we enjoyed the hospitality, help and openness of the Agency and the Faculty.