



agency for science and higher education

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

**Date of site visit:  
5–7 June 2018**

July, 2018

**MAMFORCE**



The project is co-financed by the European Union from the European Social Fund.  
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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 Faculty of Civil Engineering, University of Zagreb.

Members of the Expert Panel:

- Professor Ashraf Ayoub, City, University of London, Panel chair,
- Professor Peter Bak Frigaard, Department of Civil Engineering, Aalborg University,
- Professor Barbara Karleuša, Faculty of Civil Engineering University of Rijeka,
- Associate Professor Sanja Lončar Vicković, Faculty of Civil Engineering J. J. Strossmayer University of Osijek,
- Monika Barnjak, student, Faculty of Civil Engineering, Architecture and Geodesy University of Split.

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

- Management,
- Self-evaluation Report committee,
- Representative of Quality Assurance Committee,
- Students,
- Alumni,
- Full-time teaching staff,
- Assistants and junior researchers,
- Heads of research projects,
- Representatives of the business sector, potential employers.

The Expert Panel members had a tour of the work facilities, laboratories, library, IT classrooms, student administration office and classrooms, and attended sample lectures, where 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 Faculty of Civil Engineering, University of Zagreb, on the basis of Faculty of Civil 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 Civil Engineering University of Zagreb and writing of the Report, the Expert Panel was supported by:

- Maja Šegvić, coordinator, ASHE,
- Iva Žabarović, assistant coordinator, ASHE,
- Marina Grubišić, assistant coordinator, ASHE,
- Marko Hrvatin, interpreter at the site visit.

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: Faculty of Civil Engineering University of Zagreb

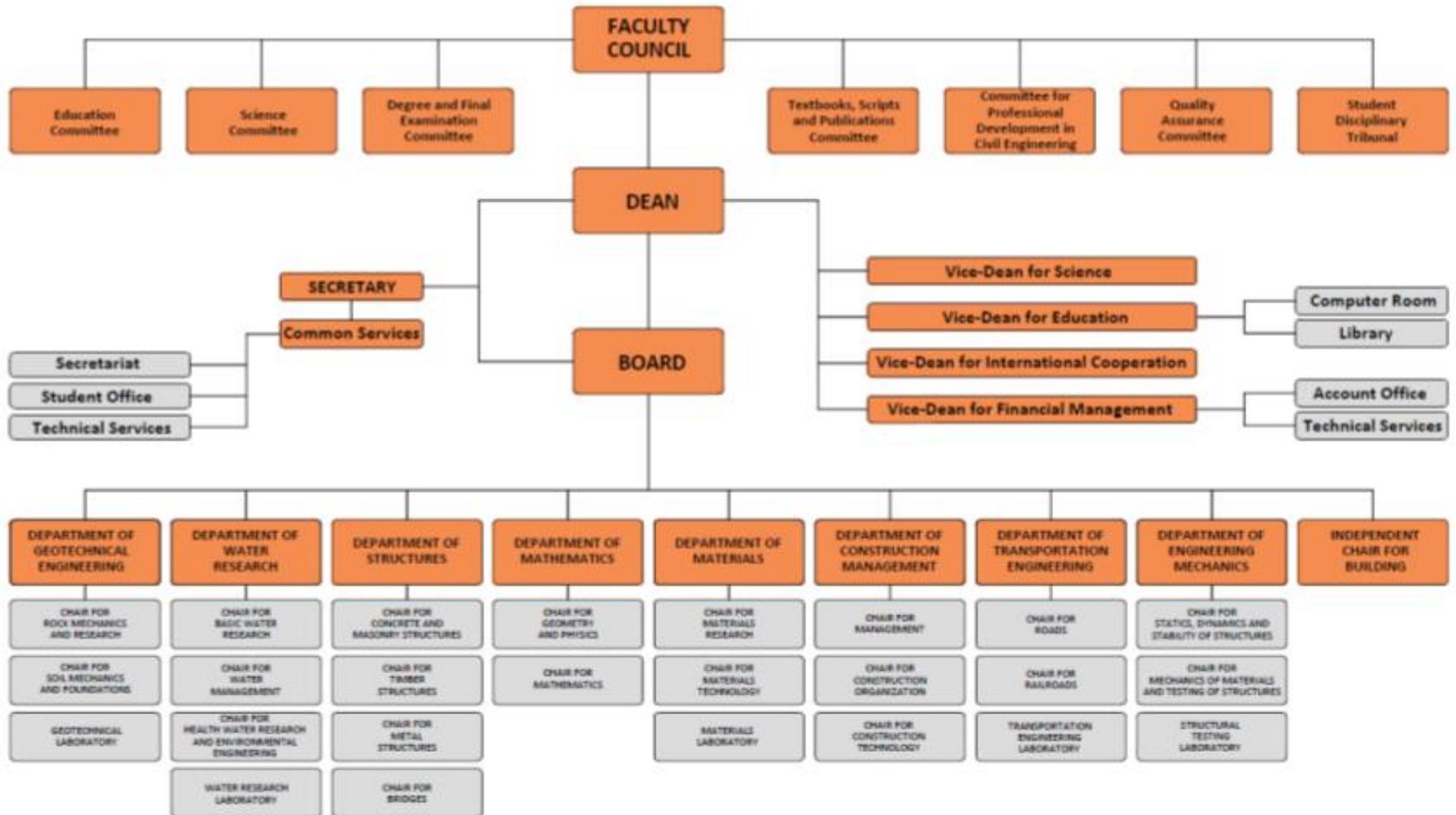
ADDRESS: Fra Andrije Kačića Miošića 26, 10000 Zagreb

DEAN: prof. dr. sc. Neven Kuspilić, full time professor, tenured

ORGANISATIONAL STRUCTURE:

Based on the Self-evaluation document on page 7

## Organizational Structure of the Faculty of Civil Engineering





#### STUDY PROGRAMMES:

- Undergraduate study programme Civil Engineering;
- Graduate study programme Civil Engineering;
- Postgraduate specialistic study programme Civil Engineering;
- Postgraduate university study programme Civil Engineering.

#### NUMBER OF STUDENTS:

Based on the Analytical self-evaluation document on page 2, Table 3.1. Number of students per study programme for the current academic year:

Study programme name	Full-time students	Part-time students
Civil Engineering (147)	771	0
Civil Engineering; specialisations in: Construction Management, Transportation Engineering, Geotechnical Engineering, Hydraulic Engineering, Structural Engineering, Construction Materials, Theory and Modeling of Structures (148)	434	0
Civil Engineering (149)	0	0
Civil Engineering (150)	20	124
Total	1.225	124

#### NUMBER OF TEACHERS:

The structure of teachers is given in Table 4.1.a in the appendix to the Self-evaluation on page 6.

Staff*	Full-time staff		Cumulative employment		External associates	
	Number	Average age	Number	Average age	Number	Average age
Full professors with tenure	14	59,14	-	-	1	64
Full professors	13	51,31	1	65	2	57,5
Associate professors	11	43	-	-	1	66
Assistant professors	33	38,79	-	-	4	52,67
Scientific advisor (permanent/with tenure)	-	-	-	-	-	-
Scientific advisor	-	-	-	-	-	-
Senior Research Associate	-	-	-	-	-	-
Research Associate	-	-	-	-	-	-
Teaching grades	7	52,71	-	-	3	69
Assistants	35	29,35	-	-	5	32
Postdoctoral researcher	12	34,17	-	-	-	-
Employees on projects	10	35,89	-	-	-	-
Expert assistants	2	45,5	-	-	1	0
Technical staff	8	46,63	-	-	-	-
Administrative staff	31	49,34	-	-	-	-
Support staff	15	54,27	-	-	-	-

\* Classification according to the Act on Scientific Activity and Higher Education

## SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

Based on Self-evaluation document on page 5

University of Zagreb Faculty of Civil Engineering is the oldest, as well as leading, Faculty of Civil Engineering in the Republic of Croatia. Faculty is the successor to the Polytechnic, Technical Faculty of the University of Zagreb and Faculty of Architecture, Civil Engineering and Geodesy in Zagreb.

Faculty was founded in 1919, with the establishment of Polytechnic. In 1926, Polytechnic evolved into Technical Faculty and as such became part of the University of Zagreb. In 1956, the Parliament of the Federal Republic of Croatia issued a decision to divide Technical Faculty into several faculties, and Faculty of Civil Engineering continued its activities as part of the Faculty of Architecture, Civil Engineering and Geodesy in Zagreb.

On 26 September 1962, the Parliament of the Federal Republic of Croatia issued a decision establishing the independent Faculty of Civil Engineering.

## ***BRIEF ANALYSIS OF THE INSTITUTIONAL ADVANTAGES AND DISADVANTAGES***

### ***ADVANTAGES OF THE INSTITUTION***

1. National reputation.
2. Very good resources and infrastructure.
3. Excellent faculty members and students.
4. Strong curriculum.
5. Outstanding research awards.
6. Good external links.
7. Generally a pleasant atmosphere and feeling of pride.

### ***DISADVANTAGES OF THE INSTITUTION***

1. Faculty's accomplishments not properly publicized.
2. Quality Assurance programme not very clear; needs to be properly formalized.
3. International education needs to be expanded and formalized.
4. International research visibility not evident.
5. No uniformity between departments.
6. Promotion and advancement criteria not very clear.
7. Research Administration Support not sufficient.

## ***LIST OF INSTITUTIONAL GOOD PRACTICES***

### ***EXAMPLES OF GOOD PRACTICE***

1. Good use of laboratory facilities.
2. High quality programmes, exams, and projects.
3. Availability of funds to attend conferences, and for best paper award.
4. Good collaboration with external stakeholders.
5. Organization of Career Day.
6. Organization of several international conferences.
7. Low drop-out rate.
8. Good participation in EU-funded projects.
9. Strong and reputable fields of studies (e.g. railway, materials).

## ***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**

The Faculty has established an internal quality assurance system, but it is not well developed and does not include external stakeholders. The overall process of collecting data, analysing them, proposing solutions and remedies to problems, re-collecting and re-analysing the data, is not present at the moment. Comments from previous accreditations and evaluations have not been fully implemented. The Faculty has a mechanism in place to prevent unethical behaviour, but more awareness to the issue of academic misconduct needs to be raised. Basic information on the Faculty's activities is posted on its website, but without a detailed analysis of important topics. The Faculty is actively engaged in the society, but its role is not clearly highlighted on its website.

#### **Recommendations for improvement**

The internal quality assurance process of the Faculty needs to be properly formalized by continually collecting and analysing data and acting upon them in case of problems, and by involving external stakeholders. The Faculty needs to seriously implement the recommendations of previous evaluations and accreditations in order to improve its performance. More awareness to the issue of academic conduct needs to be raised, and compulsory plagiarism checks for all undergraduate, graduate, and doctoral theses needs to be implemented. The Faculty's website needs to be improved to include information and data on important metrics and to showcase its involvement with the society.

**Quality grade:** Satisfactory level of quality

### ***II. Study programmes***

#### **Analysis**

The study programmes offered by the Faculty are generally strong. The programmes are in line with the strategic goals of the HEI. The learning outcomes are clearly defined and are aligned with the CroQF and EQF level descriptors. ECTS allocations are generally in accordance with the actual student workload. While some practical experience is already given to the students by implementing project work in many courses, students as well as external stakeholders wish to strengthen this element.

Formal students' feedback is monitored by the University every 3 years; however some teachers conduct a survey of their courses every year. The Faculty offers lifelong learning programmes in several fields that are in line with societal needs.

#### **Recommendations for improvement**

The Faculty needs to implement a formal periodic review of the study programme and its learning outcome that includes different stakeholders. Annual review of courses needs to be formally implemented, and the collected feedback data must be analysed, discussed and acted upon. External stakeholders need to be formally involved in the procedure of analysing and revising existing study programmes, and in planning new study programmes. Formalised practical experience should be implemented in the studies, even if the cost is a reduction in the number of theoretical courses.

**Quality grade:** High level of quality

### ***III. Teaching process and student support***

#### **Analysis**

The overall support offered to students is generally adequate, but could be improved. The admission criteria, while being clear and mainly based on state matura results, are difficult to find on the Faculty's website. Students are provided with different types of counselling, but they do not have tutors or supervisors; and not all of them know how to contact the student coordinator. Teaching is mostly conducted using the classical "ex cathedra" manner, and teachers do not use sufficient e-learning and modern teaching methods. While the library includes most of the publications the students need, it is organized in a very classical way and needs major restructuring. Students' progression data is collected and analysed regularly. Teaching assistants that are also PhD Students are aware of mobility programmes, but many have concerns it conflicts with their teaching duties. While international students are welcome, their teaching is typically conducted individually by the teacher and they are not properly integrated in the programme. Teachers and courses' evaluations are typically conducted every 3 years, but several teachers conduct annual surveys informally. The Faculty guarantees the issuing of Diploma and Diploma supplements, and ensures support for vulnerable and under-represented groups following University regulations.

#### **Recommendations for improvement**

Further support needs to be provided to students to enhance their learning and educational experience. The information on admission criteria should be easier to find on the Faculty's website. A proper and clear quality assurance programme, aided by

annual students' surveys, should be implemented to identify potential problems and act upon them. Students need to be familiar with all sources of support from the beginning of their study; an introductory lecture should include information about all types of students' support. Students' mobility needs to be encouraged and all associated problems resolved. International students need to be better integrated in the programme; expanding the courses taught in English can help in this regard. The Faculty needs to encourage its members to attend workshops to improve their teaching and assessment methods. Finally, the Faculty needs to continue its interaction with its alumni and external stakeholders, and getting them involved in its educational programme.

**Quality grade:** Satisfactory level of quality

#### ***IV. Teaching and institutional capacities***

##### **Analysis**

The number and qualifications of teachers are excellent and appropriate for the delivery of the study programme, which ensures an adequate teaching capacity. The procedures for recruitment of new teachers and advancement of current teachers are clear, objective, and transparent. However, the criteria to select between more than one candidate is not very clear. Support for teachers to improve their professional experience is provided, but could be improved, particularly with respect to encouraging international mobility. The space and infrastructure, especially with the addition of the Borongaj campus, are appropriate for the delivery of the programme. While the library contains most needed publications, it is organized in a very classical way and needs major modernization. Financial resource allocations are managed in a rational and transparent way.

##### **Recommendations for improvement**

A more flexible workload model for teachers needs to be developed, and consistency between departments needs to be respected. More unified and formalized criteria for recruitment and promotion needs to be defined. Better support for teachers and assistants needs to be provided, particularly for international mobility. The library needs to be modernized with more on-line resources, a database of papers published by teachers and researchers, a repository of students' final and graduation reports, and workshops about journal indexing and ethical conduct in publishing papers. More financial support needs to be provided to teachers, particularly to those active in research proposal submission.

**Quality grade:** High level of quality

## ***V. Scientific/artistic activity***

### **Analysis**

The research achievement of the Faculty is characterised by its excellent national and regional reputation; however further work needs to be done in order to be internationally visible. Since the last accreditation, the Faculty has taken several steps to achieve this goal. It did encourage its staff to publish in high quality journals, and has established a new publication award system to motivate them. The Faculty was successful in being awarded several international research projects, which is to be commended. The Faculty houses excellent laboratory facilities, which are being actively used for both research and education. Involvement with external stakeholders ensured the Faculty is committed to engaging with the community. The Faculty is also active in organizing several international conferences in different fields of study.

### **Recommendations for improvement**

In order to achieve international visibility, the Faculty members need to increase the publication of articles in high quality journals with high impact factors, continue to apply for competitive international research grants, increase the mobility of teachers and students, and encourage its members to participate in international conferences. A clear research strategy needs to be developed by the Faculty in order to reach this goal, which is currently lacking. Further, additional administrative research support needs to be provided to research-active teachers. Increasing the collaboration with external stakeholders, and integrating research output with education, will further help improving the Faculty's scientific achievements.

**Quality grade:** Satisfactory 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**

Internal quality assurance system was set up at the Faculty in 2004, with the establishment of the Committee for Quality Assurance (currently Quality Assurance Committee). This body is, together with the Quality Management Board and Office for Study Programmes and Quality Assurance of the University of Zagreb, part of a system of quality assurance and improvement at the University level. The Committee should, by definition, monitor and evaluate all Faculty activities. As for documents, there is a Rulebook on Quality Assurance System at the Faculty of Civil Engineering and the Manual for Quality Assurance, based on the Manual for Quality Assurance of the University of Zagreb.

Internal quality assurance system was established in 2004 but is still not fully developed. It does not formally include all stakeholders (no employers, alumni, representatives of professional organizations and civil society organizations) and its leader is the Vice Dean for Education, as part of the Faculty' management team (Committee for Quality Assurance).

The Faculty adopted and displayed a quality assurance policy Quality Assurance Policy. The new Development Strategy of the University of Zagreb Faculty of Civil Engineering 2018-2023 defines areas of improvement, goals and measures needed to achieve the goals, including the SWOT analysis, the operational plan and monitoring mechanisms. The 2018-2023 research strategy is one part of the whole Faculty's five year strategy, stating research aims and actions, but not elaborated in detail or full scope. The report on the accomplishments of the existing Strategy document 2012-2017 Development Strategy of the University of Zagreb Faculty of Civil Engineering 2012-2017 does not mention quantitative indicators, goals and measures, as they were not originally outlined.

The Faculty collects different data and conducts data analysis but it lacks systematic approach and it is not evident that the acquired information and conclusions are used for the institution's further development because no feedback is present.

### Recommendations for improvement

The internal quality assurance system's structure should be amended to include external stakeholders and exclude members of Faculty management, with the aim to become an objective and helpful tool in institutional self-reflection. The Committee should be more strongly and broadly involved in strategic planning, including study programmes' analysis, teaching support, student surveys, etc.

It is recommended that the Faculty defines data that are important for the assessment, assurance and enhancement of its overall quality. That data should be regularly and systematically collected based on different sources and various methods, analyzed, its results presented and discussed and finally used to define adequate measures and policies for improvement and change. The impact of these policies should also be assessed and feedback collected, analyzed and made available to all internal and external stakeholders.

**Quality grade:** Satisfactory Level of Quality

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

### Analysis

The Faculty went through several audits and accreditation and re-accreditation processes within the last six years, among them ASHE re-accreditation in 2012, ASIIN accreditation in 2012, internal audit in 2014 and doctoral studies' accreditation in 2016.

Some improvements and changes have been implemented due to recommendations of these audits, according to the Faculty's management and evidence provided during the visit; however, those changes could not be established via documents or procedures. There were no significant analyses of the recommendations and no adequate action plans or follow ups were visible, signalling that the Faculty made little use of past reports. However, the last doctoral studies' accreditation in 2016 generated results in form of Rulebook on rewarding employees.

### Recommendations for improvement

This Panel strongly urges the Faculty to take into account all audit and accreditation reports and recommendations and use them as clear, well intentioned guidelines for the definition of measures and actions for improvements. Because those recommendations are documented and reality-based, they should be discussed between different stakeholders and its feasible elements incorporated in strategic planning.

**Quality grade:** Minimum Level of Quality

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

**Analysis**

There are several measures and mechanisms in place designed in order to prevent unethical behaviour at the Faculty. There is a valid Code of Ethics and Ethical Committee, Decision on the Declaration of Authenticity (submitted by applicants at the time of election for scientific/scientific-teaching jobs and while submitting final, graduation, specialization and doctoral theses), a designated student ombudsperson as well as tools (software) available to detect plagiarism. Cheating is also regulated through the Code of Ethics, the Disciplinary Court for Students and the Ordinance on disciplinary liability of students.

The issues of plagiarism and cheating are addressed but these rules and procedures are implemented based on individual initiatives and, in case of cheating, very rarely.

**Recommendations for improvement**

It is recommended to define a procedure that requires obligatory plagiarism checks for all undergraduate, graduate and doctoral theses. It is also recommended to raise the awareness of both students and teachers of the issue of academic misconduct.

**Quality grade:** Satisfactory Level of Quality

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

**Analysis**

Most information on different activities, admissions, study programmes and other aspects of the Faculty life are available at the website. There is data on admission criteria, enrolment quotas, study programmes, learning outcomes and qualifications as well as some forms of support available to students.

The Faculty informs stakeholders on scientific and professional topics, projects and results, and the transfer of knowledge and technology.

Information concerning other quality indicators such as pass rate analyses, drop-out rates or improvements and actions performed after previous evaluations are not available to external and, in most cases, internal stakeholders as well.

### Recommendations for improvement

Information about the Faculty should be more complex, containing in-depth analysis of important topics like pass rate analyses, drop-out rates, student survey results and audit reports, and open in regard to eventual not so favourable data. Its web site should provide info on the social role of the Faculty and its engagement in the community. It could also become an interface for several stakeholders - students, employers, researchers - to contact and exchange information, needs and ideas.

**Quality grade:** Satisfactory Level of Quality

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

### Analysis

The Faculty has not defined an important social role as a part of its mission, being more scientifically and professionally oriented. However, their social presence is important and visible and the Faculty contributes to the development of Croatian economy conducting various projects with the industry, defining and performing graduate and doctoral theses in cooperation with the economic and scientific community.

The higher education institution contributes to the foundations of the academic profession and the accountability of teachers for the development of the university and the community.

Members of the Faculty staff are active and have leading roles in various boards, bodies, committees at a national and international level. External stakeholders emphasized the quality of existing collaboration with the Faculty, valuing their role in the society. There were also examples of voluntary work on behalf of students and teachers.

### Recommendations for improvement

The social role of the Faculty should be explicitly expressed in the mission statement in order to reflect its importance. It should also be highlighted and made more visible on the Faculty's website and other sources of information.

**Quality grade:** High Level of Quality

## *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**

All study programmes are in line with and follow the mission and the strategic goals of the Faculty.

The admission policy of all study programmes is transparent and aligned with the recommendations of the Croatian Employment Service.

The Faculty possesses sufficient capacity to carry out and further develop the existing study programmes.

All external stakeholders expressed a high level of satisfaction about the quality of the study programmes and the qualifications of the graduates. Despite the general satisfaction, the external stakeholders asked for more formalised practical experience for all students. However, some practical experience is already given 'in-house', implementing project work in many courses. Still, students as well as external stakeholders wish to strengthen this element.

#### **Recommendations for improvement**

Continuation in developing stronger ties with the industry and strengthening the international dimension on the graduate as well as post graduate level.

More formalised practical experience should be implemented in the studies. This should be done, even if the cost of more practical experience is a reduction in the number of theoretical courses.

**Quality grade:** High 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 Faculty has clearly defined the learning outcomes of the study programmes. Learning outcomes are presented to students at the beginning of courses.

Study programmes are normally updated each year, in terms of implementing the latest achievements of the profession. However, no formal procedure for such updates exists.

Learning outcomes achieved in the study programme are aligned with the CroQF and EQF level descriptors. These learning outcomes were confirmed by external stakeholders and evidence delivered by the Faculty.

Study programmes of the Faculty lead to a regulated profession, in accordance with the List of Regulated Professions in the Republic of Croatia, adopted by the Government of the Republic of Croatia pursuant to Article 72 of the Act on Regulated Professions and Recognition of Foreign Professional Qualifications.

#### **Recommendations for improvement**

Implement a formal periodic review of the learning outcomes.

**Quality grade:** Satisfactory Level of Quality

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

#### **Analysis**

Evidence of the achievement of intended learning outcomes is based on informal procedures. All teaching processes are monitored every three years by the university. At the Faculty level, a yearly survey is performed based on request from teachers. Student success is regularly monitored using the “Course Analysis” table for each individual course.

External stakeholders are not directly involved in giving feedback on the achievement of intended learning outcomes. The external stakeholders expressed a willingness to take part in such a feedback process. In general stakeholders are satisfied with the qualifications of graduates.

There has been a project collecting data on learning outcomes of the study programme, but that was just one year and was not clearly implemented.

Much evidence of high quality student achievements was seen. All theses and exam papers, as well as external stakeholders and alumni comments, show evidence of successful outcomes of the study programmes.

#### **Recommendations for improvement**

A clear and systematic procedure to provide evidence of the achievement of the intended learning outcomes of the study programmes must be implemented.

Data must be collected periodically, analysed, discussed and in case of problems necessary actions must be taken.

**Quality grade:** High Level of Quality

#### **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**

The Faculty has an open policy for involving all stakeholders in changing study programmes. Nevertheless, no formal procedures were discovered.

Minor development activities related to study programmes have been ongoing since the studies were set up according to the Bologna system. Changes have been driven by teachers with some input from employers.

Consequences of changes in the study programmes were not analysed systematically.

No evidence of overlap with other study programmes within University of Zagreb was seen.

##### **Recommendations for improvement**

Formal involvement of external stakeholders and organisations in the procedure of analysing and revising existing study programmes, and in the planning and proposal for new study programmes must be implemented.

**Quality grade:** Satisfactory Level of Quality

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

##### **Analysis**

Meetings with teachers as well as students clearly expressed that the Faculty allocates ECTS credits in accordance with the actual student workload.

Few students described a study with a high workload, but no specific problems related to the workload from any particular course.

After implementing the Bologna system in the studies, the Education Committee analysed the experience of students and teachers and found that students were overburdened. Consequently some changes on the workload were implemented.

##### **Recommendations for improvement**

Monitor the student workload in all surveys.

**Quality grade:** High Level of Quality

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

### **Analysis**

Formal student practice is present in one graduate study programme; Construction Management. Other students have the possibility to apply for student practice, but it is not an integral part of the study. Even though some professors might help students in finding student practice, it will normally be up to the student to arrange student practice.

As part of the Field Class, which is part of the undergraduate study programme and carries 3 ECTS, all students are taken to the plant for production of concrete and other construction products and to a number of construction sites, where in real production setting they have the opportunity to familiarize themselves with the technology, organisation and business elements present in the excursion of civil engineering projects.

At the graduate study, Practical Training is a course within Construction Management. Students must visit the construction site once per week during this course.

### **Recommendations for improvement**

More formalised practical experience should be implemented in the undergraduate as well as the graduate studies. This should be done, even if the cost of more practical experience is a reduction in the number of theoretical courses.

**Quality grade:** Satisfactory Level of Quality

## **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**

The Faculty offers lifelong learning programmes in several fields. The programmes are aligned with the strategic goals of the Faculty.

During meetings with external stakeholders, these lifelong learning courses were appreciated; in particular a course in Fire Protection was acknowledged.

The Faculty's lifelong learning programme is defined and aligned with the needs of the construction industry. The Faculty delivers part of the lifelong learning programme in cooperation with companies, and adapts it to their specific needs.

In general the external stakeholders would like to be contacted even more by the university advertising new knowledge or seminars.

### Recommendations for improvement

Continue the practice of offering lifelong learning programmes.

**Quality grade:** High Level of Quality

## *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

The criteria for admission or continuation of undergraduate and graduate studies are published, but it is difficult to find the information on the website. The Criteria for admission in the undergraduate study programme based on state matura is applied. Candidates are selected based on state matura results; and there is no need for additional entry criteria. All civil engineering bachelors are eligible to apply for the graduate study programme. Professional bachelors and other technical university bachelors could also apply, with the condition to acquire additional 20 ECTS.

### Recommendations for improvement

Information about the criteria for admission or continuation of studies should be easier to access on the website of the Faculty.

**Quality grade:** High 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

The information on student progress in the study programmes is regularly collected and analyzed based on Tables 3.4 and 3.5 (Analytic supplement to Self-evaluation report).

The institution provides major assistance in teaching, but students do not use it very often. To make it easier for students to decide which graduate study programme to pursue, at the end of each academic year, teachers organize an informative lecture about specific courses of study for third-year students in the undergraduate study programme which the students find very helpful.

### Recommendations for improvement

Use collected data proactively to identify potential problems and act upon them if needed.

**Quality grade:** High Level of Quality

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

#### Analysis

Classes consisting of lectures and exercises are usually delivered in the classical “ex cathedra” manner. Professors do not use enough e-learning and modern teaching methods to improve learning outcomes.

Students have to solve a large number of group or individual projects for many courses, especially in the 6th semester. Field work is involved in courses where it can be applied but students still prefer more of it.

The Faculty has five laboratories: materials laboratory, structural testing laboratory, geotechnical laboratory, laboratory for roads, and water survey laboratory; which is very good for scientific work, teaching exercises, and for student work on the master thesis.

The Faculty encourages excellence by rewarding students for the success they achieve. Students are very interested in the Rector's award and they are working on projects which will give them opportunity to apply for it.

The student survey of courses/teachers at the University level is conducted every three years. The results are not transparent and are not available to students and employers, only to the Dean. Some teachers informally or formally conduct surveys every year, checking students' experience with their subject. Based on surveys, teachers implement some changes in the subject in the following academic year.

Undergraduate students complain about the low number of classes where they can learn and earn practice in commercial software use, such as AutoCad, which they need in their education and for resolving problems.

### Recommendations for improvement

The surveys should be conducted more often (every semester/every year) and results should be visible. In that way, students can see progress and value the purpose of those surveys. Increase the number of workshops for students, where they can improve skills that are not sufficiently present during the studies.

**Quality grade:** Satisfactory Level of Quality

### **3.4. The higher education institution ensures adequate student support.**

#### **Analysis**

Students are provided with academic counselling and development of academic skills support, psychological counselling support, career counselling, direction and information support, internships support, and support to students with disabilities.

The Student Support Coordinator is available to students during their studies, but students do not have tutors or supervisors; and not all students know how to contact the coordinator.

Support to students with disabilities is organized in cooperation with the Student Affairs, Vice-Dean for Education through the Student Support Coordinator and Office for Students with Disabilities of the University of Zagreb.

#### **Recommendations for improvement**

At the beginning of the studies students should be familiar with all possibilities of the support at the Faculty. An introductory lecture should include information about student support.

**Quality grade:** Satisfactory Level of Quality

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

#### **Analysis**

Based on the Self-evaluation report, and conversation with Student's office staff, the Faculty has a Student Support Coordinator who provides support to students from vulnerable and underrepresented groups, along with the Student Affairs and Vice-Dean for Education. The Faculty building is adjusted for students with disabilities.

Considering the profession, there is a small number of disabled students who enrol in the programme. However, based on conversation with Student's office staff, there was one student with disabilities who successfully graduated.

#### **Recommendations for improvement**

Emphasize the opportunities for the students with disabilities.

**Quality grade:** High Level of Quality

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

### Analysis

Students are aware of the possibilities of mobility during the study. They know where to find information if they need it. On the Faculty website 14 foreign universities (based on bilateral contract) are listed for students to study abroad.

The Office of International Cooperation, ECTS Coordinator, Student Affairs, Vice-Dean for International Affairs and Cooperation and Vice-Dean for Education are available to students during application and realization of the exchange programme.

Table 3.6 from the Analytic Supplement database contains the number of outgoing mobility students in the last five years; and that number has increased since the last Re-accreditation in 2012 which was carried out by the Agency for Science and Higher Education (ASHE).

PhD students are informed about mobility during the “Mobility Week” held on the Faculty premises. However, some students expressed concerns that mobility might interfere with their teaching duties in case of a prolonged absence. The Faculty needs to provide more support for these students and resolve this issue.

### Recommendations for improvement

It is important for students to understand the importance of mobility: for the internationalization of the Faculty, gathering experiences, developing skills, and being introduced to new cultures. By organizing lectures where others exchange their experience about mobility, greater promotion and motivation can be achieved for students. The Faculty needs to provide more support for PhD students mobility.

**Quality grade:** Satisfactory Level of Quality

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

### Analysis

Information on the opportunities for enrolment and study is available to foreign students in the English language on the website of the Faculty. During the application process and the duration of study at the Faculty, foreign students are provided with support from the Office of International Cooperation, ECTS Coordinator, Student Affairs, Vice-Dean for International Affairs and Cooperation and Vice-Dean for Education. That information was also confirmed during the site visit.

The Incoming Student Mobility in the last five academic years can be seen in Table 3.6 from the Analytic Supplement database (21 incoming students that stayed more than 3 months in the last 5 years).

The Faculty organizes the option of lectures in the English language for foreign students even though it is usually a small number; sometimes professors teach only one student in English. That way, a productive collaboration between Croatian and foreign students is not being ensured.

The University of Zagreb organizes Croatian language instructions for interested foreign students.

#### Recommendations for improvement

The Faculty should attract more foreign students through promotion activities to achieve better international connections. Feedback from the current foreign students needs to be collected and analyzed. The ongoing work in setting up courses in English should be expanded.

**Quality grade:** Satisfactory Level of Quality

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

#### Analysis

At the beginning of the semester, students are presented with the criteria and methods of evaluation and assessment for most subjects. Students sometimes are not clear with grading weights of specific components of the course.

The appeal process is defined in the “Rulebook on attending undergraduate and graduate study programmes at the University of Zagreb Faculty of Civil Engineering”. There are examples of appeals procedure about the assessment and the resolution procedure.

Current practice of assessment is based on the individual. In the self-evaluation report and during the site visit, no significant feedback to students was detected, and there is no evidence of double marking.

#### Recommendations for improvement

Improve and enhance the teachers' knowledge on teaching methods, evaluation, and assessment methods through workshops, peer review and exchange of good practices. More feedback on the evaluation should be given to students.

**Quality grade:** Satisfactory Level of Quality

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

### Analysis

Upon completion of their studies, students are issued a Diploma and Diploma Supplement; for which examples were shown during the Faculty tour. The Diploma Supplement is issued in Croatian and English. The Diploma and Diploma Supplement are issued in accordance with the Rulebook on the content of Diplomas and Diploma Supplements published by the Ministry of Science and Education. Instructions are published and can be seen on the website of the Ministry of Science and Education.

### Recommendations for improvement

No recommendations

**Quality grade:** High Level of Quality

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

### Analysis

The HEI analyses the employability of its graduates which can be seen in Table 3.7 of the Analytic supplement to THE Self-evaluation report. Admission quotas are aligned with social needs and needs of the labour market. Based on the Self-evaluation report, data from the Croatian Employment Service regarding the need for Masters of Civil Engineering in certain parts of the Republic of Croatia is analyzed at the time of request to increase the admission quota for the undergraduate university study in civil engineering, academic year 2016/2017. It was concluded that an increase of admissions quota is justified, which has been confirmed by obtaining a higher admissions quota. The institution organizes a “Career Day”, which is a good opportunity for finding employment after graduation. The Faculty maintains contacts with former students through individual informal means, through joint projects or through the Croatian Association of Graduate Civil Engineers of the Faculty of Civil Engineering at the University of Zagreb (AMCA-FA). In 2015, the Centre for Career was founded with AMCA-FA. The Center conducted research of career monitoring of Faculty’s former students.

### Recommendations for improvement

Although the connection with former students is good, the Faculty should continue to keep in touch with them and use their experience to improve their teaching, lectures, and introduce new developments to the programme.

**Quality grade:** High Level of Quality

## *IV. Teaching and institutional capacities*

### **4.1. The higher education institution ensures adequate teaching capacities.**

#### **Analysis**

According to the data from the Analytic Supplement (Table 4.1a), 71 teachers have the scientific-teaching grade, 7 teachers have the teaching grade. There are 35 teaching assistants, 12 postdoctoral fellows, 10 employees on projects' budget. According to data from MOZVAG, the ratio of fully employed teachers/students is 19,07; and the ratio of fully employed teachers (with coefficient 1) and teaching assistants (with coefficient 0,5)/students is 13,69.

The number and qualifications of teachers (according to Analytic Supplement Table 4.1a and 4.4.) are appropriate for the delivery of the study programme and achievement of the intended learning outcomes. This ensures a high quality of study.

On average, all teaching staff have a workload in accordance with relevant legislation, policies and regulations (according to Analytic Supplement Table 4.3). Some teachers that have a higher teaching workload are part of the Faculty management (so their teaching workload can be 50% less than for other teachers) and/or are involved in the doctoral study programme. The teaching working load is allocated among teachers at the department level.

Teacher workload ensures appropriate distribution of teaching, scientific activities, professional and personal development and administrative duties. Since only the teaching workload is regulated (norm hours per teacher per year), all teachers have to fulfil this condition. But during the meeting with teachers it was pointed out that there should be a more flexible way to allow teachers who are more interested and successful in scientific research to have less teaching workload.

#### **Recommendations for improvement**

Explore the possibility of having more flexible workload distributions between teaching, scientific and professional activities.

**Quality grade:** High Level of Quality

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

### Analysis

Based on the Self-evaluation report and the materials provided during the site visit the procedures of teacher recruitment are aligned with the Faculty development goals, relevant regulations and internal regulations.

In the selection, appointment, and evaluation of teachers, the Faculty takes into account their past activities (teaching, research, student feedback, etc.).

Teacher recruitment procedures are appropriately regulated, transparent, consistently applied and implemented within the prescribed deadlines.

The higher education institution has appropriate methods for selecting the best candidates for each position. There are no formal competitive, excellence-based recruitment criteria in addition to the minimum requirements prescribed by national legislation. In case of teaching assistants' employment, if two or more candidates apply for the same job position, the Committee in charge of compiling a report on selection defines additional criteria (student awards, involvement in teaching and/or projects, publications, etc.).

### Recommendations for improvement

Define unified additional criteria to use in case two or more candidates apply for the same job position.

**Quality grade:** High Level of Quality

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

### Analysis

There is the Rulebook on procedures for re-appointment of teachers at the University of Zagreb Faculty of Civil Engineering from May 2016. From the analysis of the documentation provided on-site during the visit, it can be concluded that the Faculty uses objective and transparent academic promotion procedures that are based on assessment and rewarding of excellence (scientific, teaching and professional activity of teachers). Important achievements (such as international contribution to the scientific discipline, high-impact publications, significant scientific discoveries, successful projects, success in securing additional funds, supervision of final and graduation theses, authorship of textbooks / study materials, popular lectures, etc.) are taken into account when considering teachers' advancement.

There are no formal additional criteria for the promotion of teachers that reflect the strategic goals of the higher education institution. However, because of the new employment restrictions (defined with the total budget/total coefficient of the

Faculty), additional criteria (that are not formally defined) are used at the department level for preparation of the list for advancement if there are more candidates.

During the meeting with teachers and heads of research projects, they hoped to implement additional competitive, excellence-based criteria for advancement in addition to minimum requirements prescribed by national legislation.

#### **Recommendations for improvement**

Unify and formalize additional criteria for advancement at the Faculty level.

**Quality grade:** Satisfactory Level of Quality

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

##### **Analysis**

The Faculty provides opportunities for the improvement of teaching competencies. This is not obligatory and it depends on the teacher's interest. There is a Rulebook on additional education and training for employees in scientific, teaching and associate professions (December 2017) that defines the conditions and manner in which scientific-teaching, teaching and associate profession employees at the Faculty of Civil Engineering, University of Zagreb, are sent to additional education and training courses, along with their rights and obligations and plans for allocation of funds. Additional education for teaching competences improvement is periodically organised at the university level.

There is no formal assessment and improvement of teaching competencies based on peer-review recommendations and the results of student satisfaction surveys. However, all candidates for assistant professor job positions have to give a one-hour inaugural lecture in front of the Committee, members of the Faculty council and students. This lecture is assessed by the Committee and is part of the selection procedure that is defined by national regulation.

During meetings with teachers and teaching assistants, it was mentioned that often teaching assistants at the beginning of their work attend the senior teacher lectures of courses in which they are giving exercises and that senior teachers follow their work more intensively and attend these exercises.

Student satisfaction survey is formally organised for all courses once in 3 years. There is no formal analysis of the survey results by courses/teachers at the QA board meetings, department or teacher-teacher assistant level. There is only informal exchange of results between teachers that are willing to show and discuss their own evaluations with colleagues.

Teachers participate in international mobility programmes, projects and networks; but this could be enhanced. Some teaching assistants are limited to participating in longer international mobility during semesters because they have teaching obligations.

#### Recommendations for improvement

Make the general results of students' surveys publicly available, and all the results available to the QA board and heads of departments. The results regarding courses and teachers should be available to the head of department, who is in charge of the quality of teaching at the department level. Motivate the teachers to discuss the results regarding the course that they are in charge of with the teaching assistant(s) of that course. Promote peer-review, especially at the same level and between departments. Organise the on-line student survey annually. More support should be provided for assistant teacher's mobility.

**Quality grade:** Satisfactory 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

The higher education institution plans and improves the infrastructure development, in line with the strategic goals. The University provided the Faculty with a building located in the Borongaj campus for the development of scientific and research activity within the Centre for Research and Development of Safe and Sustainable Environment. The Faculty has successfully applied for its adaptation to the indicative list of Preparations of RDI infrastructure projects of the Ministry of Science and Education. Based on data from the Analytic Supplement (Table 4.8, 4.9) and MOZVAG, the Faculty on-site visit, and meetings with students and teachers, it can be concluded that the space (6,381 m<sup>2</sup>, 4,73 m<sup>2</sup> per student), equipment and the entire infrastructure (laboratories, IT services, work facilities, etc.) are currently appropriate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and for the implementation of scientific and professional activities.

#### Recommendations for improvement

Continue with the adaptation of the building in Borongaj Campus.

**Quality grade:** High Level of Quality

#### **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**

The library is used by three Faculties (Faculty of Civil Engineering, Faculty of Architecture and Faculty of Geodesy). The library area is 361 m<sup>2</sup>, and has three employees, 3 000 volumes, 4500 volumes of compulsory textbooks, 315 foreign and 60 domestic printed journals, and 11 on-line journals (that are paid for by the Faculty). It meets the student needs for textbooks, but lacks in archive/repository of students final and graduation reports and database of papers published by teachers/researchers.

The library is often used for students' individual and group work.

Teachers and PhD students are more oriented to use on-line journals and other web-oriented sources.

##### **Recommendations for improvement**

Change the concept of the library, by developing a modern library that provides additional services (organises workshops on journal research, journal indexing, ethical conduct in writing and publishing papers, issuing the certificate of citation and indexation of published papers to teachers, etc.), is more adaptable to the needs of teachers and students today, and more web integrated.

Develop the database of papers published by teachers/researchers.

Create the archive/repository of students' final and graduation reports.

Provide access to more on-line journals.

**Quality grade:** Satisfactory Level of Quality

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

##### **Analysis**

Financial sustainability and efficiency is evident in all aspects of the Faculty activity. This is supported by data presented in the Analytic Supplement (Table 4.11).

The Faculty manages its financial resources transparently, efficiently and appropriately. The Dean submits a financial report annually. The distribution of extra budgetary income is defined by the Rulebook on realization and right of use of own and other extra budgetary income of the Faculty, adopted by the Faculty Council, March 2015. The Rulebook regards income from teaching, scientific and professional activity, and other activities. Income is primarily intended for paying direct costs incurred by business operations which generated the income.

As explained in the Self-evaluation report:

“Income from scientific projects is distributed so that at least 10% is used for development and improvement of the Faculty activities and for material business expenses. The remaining part is used to cover the cost of scientific project execution (material cost of project execution, equipment supply, payment to teachers and external associates who participated in realization of projects). Rulebook also defines the distribution of income from technological programs and projects and expert opinions, whereby at least 12% is used for development and improvement of activities and material business cost of the Faculty. Income from international programs and projects is used in accordance with the terms and conditions of projects specified in tender documentation and performance contract. From professional work at least 21% is allocated to the development and improvement of the activities and for material costs of Faculty operations, 4% to cover the expenses of the organizational unit, including expenditure for the acquisition of non-financial assets of the organizational unit and the rest to cover direct costs related to generation of income.”

#### **Recommendations for improvement**

Allocate more financial resources to better support teachers and researchers (for preparation of project applications, co-financing projects, etc.).

**Quality grade:** High 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:**

The research achievement at the Faculty is characterised by its excellent national and regional reputation. The Faculty is committed to encouraging its members to publish in high quality journals, and has established a new award system to motivate its teachers. This should increase the number of citations and further increase the international reputation of the Faculty. Indeed, it appears that the quality of research output has improved since the last accreditation. More papers are now published in journals with high impact factors. The DOI of papers is published online, again potentially increasing the number of citations. The organization of several national and international conferences further contributes to the visibility of the Faculty. The Faculty is also involved in several European research projects and projects funded by the Croatian Science Foundation.

#### **Recommendations for improvement**

The Faculty needs to continue the system of providing incentives for teachers to publish in high quality journals with high impact factors, which would greatly improve the international visibility of the Faculty. The Faculty needs to continue contributing to internationally funded research projects. It needs to ensure PhD dissertations are published in English to attract more visibility and increase teachers and PhD students' participation in international conferences.

**Quality grade:** Satisfactory 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:**

The Faculty has good links with industry partners, who are involved in research, and are interested to participate more in practical research projects with societal needs. This should contribute to the welfare of society as a whole. As an example, they were involved in a project related to the development of concrete sandwiched panels. The Faculty has also good links with different professional organizations, such as the Croatian Chamber of Civil Engineers and others. Its role in society is evident through the participation in various activities with these professional organizations, who

greatly value the input and opinion of the Faculty members. The Faculty organizes several workshops that are well attended by members of the professional bodies.

**Recommendations for improvement:**

While the Faculty is already involved with different organizations in the society, further links with industry partners and alumni could be improved with the goal of resolving different societal problems.

**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:**

The teachers at the Faculty are heavily involved in national and international research projects, publish regularly in technical journals, and are active in the scientific community. The number of international projects has clearly increased in the past four years, as shown in Figure 3 of the Self-Evaluation report, including six projects funded by the Horizon 2020 programme. The number of publications of the highest category according to the Ordinance of Appointment to Scientific Grades, and the corresponding ratio per teacher is shown in Table 5.1 of the Analytic Supplement to Self-evaluation report, and is generally adequate. The Faculty teachers are very active at national and international conferences receiving a large number of invitations to deliver lectures. Furthermore, several conferences are organized by the Faculty in different subject areas. The Faculty teachers and students have received awards for new innovations and technologies, excellence in reviewing papers, and best doctoral thesis. However, while achievements of the Faculty are clearly recognized locally, international visibility is not evident and needs to be improved.

**Recommendations for improvement**

In order to achieve international recognition, the Faculty needs to continue the system of providing incentives for teachers to publish in high quality journals with high impact factors, and continue to apply for international research projects. The Faculty also needs to encourage participation in international conferences, increase the incoming and outgoing mobility of teachers, researchers and PhD assistants, and ensure PhD dissertations and other publication reports are published in English.

**Quality grade:** Satisfactory Level of Quality

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

##### **Analysis:**

The involvement of teachers in international research projects and the organization of international conferences, along with the excellent lab facilities are good factors that could contribute to ensuring the research is sustainable and developmental. The continuous recruitment of high level research students and the increase in number of assistant professors, is another element that ensures sustainability. However, the Faculty lacks a clear research strategy. The current strategy in the general mission statement is too general and very broad. No strategic research agenda with clear and well-defined objectives is provided. The research topics sought appear to be pursued based on individual preference with no links to a defined agenda. Furthermore, the teachers' workload is not currently balanced between the different departments. Teachers who are heavily involved in research projects do not get adequate release from teaching duties. The supervision of PhD students is not also uniform across departments. Finally, the Faculty needs to invest more in the office for research administration. At present, limited administrative support is provided to teachers who are applying for research grants.

##### **Recommendations for improvement:**

The Faculty needs to develop a well defined and detailed research strategy and ensures there is a corresponding quality assurance process in place to ensure its success. The Faculty needs also to pay special attention to the teachers' workload, and the way PhD students are supervised. It is recommended that PhD committees include foreign members and external stakeholders. More administrative support needs to be provided for teachers involved in national and international research projects.

**Quality grade:** Minimum level of Quality

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

##### **Analysis:**

Based on information gathered during the onsite visit, the panel concluded that some undergraduate students are involved in research as part of their education, and a few participated in the contest for Rector's Award. External stakeholders also are interested to integrate their research achievements within the curriculum. However,

there is no formal procedure in place to integrate research with education. At present, the research and educational areas are not sufficiently connected.

**Recommendations for improvement:**

More formal way to introduce research into the curriculum is needed. Development of educational modules derived from research results could be added to the corresponding course contents. Research assignments could be also integrated as parts of the course offering.

**Quality grade:** Satisfactory Level of Quality

## ***APPENDICES***

**1. Quality assessment summary - tables**

**2. Site visit protocol**

<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>			<b>X</b>	
<i>II. Study programmes</i>				<b>X</b>
<i>III. Teaching process and student support</i>			<b>X</b>	
<i>IV. Teaching and institutional capacities</i>				<b>X</b>
<i>V. Scientific/artistic activity</i>			<b>X</b>	

## *Quality grade by standard*

<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.			<b>X</b>	
1.2. The higher education institution implements recommendations for quality improvement from previous evaluations.		<b>X</b>		
1.3. The higher education institution supports academic integrity and freedom, prevents all types of unethical behaviour, intolerance and discrimination.			<b>X</b>	
1.4. The higher education institution ensures the availability of information on important aspects of its activities (teaching, scientific/artistic and social).			<b>X</b>	
1.5. The higher education institution understands and encourages the development of its social role.				<b>X</b>

## *Quality grade by standard*

<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.				<b>X</b>
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.			<b>X</b>	
2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.				<b>X</b>
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.			<b>X</b>	
2.5. The higher education institution ensures that ECTS allocation is adequate.				<b>X</b>
2.6. Student practice is an integral part of study programmes (where applicable).			<b>X</b>	
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.				<b>X</b>

### *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.				<b>X</b>
3.2. The higher education institution gathers and analyses information on student progress and uses it to ensure the continuity and completion of study.				<b>X</b>
3.3. The higher education institution ensures student-centred learning.			<b>X</b>	
3.4. The higher education institution ensures adequate student support.			<b>X</b>	
3.5. The higher education institution ensures support to students from vulnerable and under-represented groups.				<b>X</b>
3.6. The higher education institution allows students to gain international experience.			<b>X</b>	
3.7. The higher education institution ensures adequate study conditions for foreign students.			<b>X</b>	
3.8. The higher education institution ensures an objective and consistent evaluation and assessment of student achievements.			<b>X</b>	
3.9. The higher education institution guarantees the issuance of Diploma Supplements and adequate qualification information.				<b>X</b>
3.10. The higher education institution is responsible for the employability of graduates.				<b>X</b>

<i>Quality grade by standard</i>				
<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.				<b>X</b>
4.2. The higher education institution has an objective, transparent and excellence-based procedure of teacher recruitment.				<b>X</b>
4.3. Teacher advancement and re-appointment is based on objective and transparent procedures.			<b>X</b>	
4.4. The higher education institution provides support to teachers in their professional development.			<b>X</b>	
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.				<b>X</b>
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.			<b>X</b>	
4.7. The higher education institution rationally manages its financial resources.				<b>X</b>

### *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.			<b>X</b>	
5.2. The higher education institution provides evidence for the social relevance of its scientific / artistic / professional research and transfer of knowledge.			<b>X</b>	
5.3. Scientific/artistic and professional achievements of the higher education institution are recognized in the regional, national and international context.			<b>X</b>	
5.4. The scientific / artistic activity of the higher education institution is both sustainable and developmental.		<b>X</b>		
5.5. Scientific/artistic and professional activities and achievements of the higher education institution improve the teaching process.			<b>X</b>	

**VISIT PROTOCOL**  
**Tuesday, 5<sup>th</sup> June 2018**  
**Venue: Fra Andrije Kačića Miošića 26, Zagreb**

Tuesday, 5 <sup>th</sup> June 2018	
<b>9:00 - 10:00</b>	Meeting with the dean, vice-deans and secretary ( <i>no presentations</i> )
<b>10:00 - 10:15</b>	<i>Internal meeting of the panel members</i>
<b>10:15 - 11:00</b>	Meeting with the working group that compiled the Self-evaluation and Quality Assurance Committee
<b>11:00 - 12:00</b>	<i>Internal meeting of the panel members (Document analysis)</i>
<b>12:00 - 13:10</b>	Meeting with the students (open meeting for the students undergraduate and graduate programs)
<b>13:10 - 14:30</b>	<i>Working lunch</i>
<b>14:30 - 15:15</b>	Meeting with the Alumni
<b>15:15 - 16:00</b>	Meeting with external stakeholders -representatives of professional organisations, business sector/industry sector, professional experts, non-governmental organisations, external lecturers
<b>16:00 - 17:00</b>	Organisation of additional meeting on open questions, if needed

Wednesday, 6 <sup>th</sup> June 2018	
<b>9:00 - 9:45</b>	Meeting with the vice-dean for education
<b>9:45 - 11:00</b>	<i>Internal meeting of the panel members (Document analysis)</i>
<b>11:00 - 12:00</b>	Meeting with full-time employed teachers (open meeting)
<b>12:00 - 13:00</b>	Meeting with teaching assistants
<b>13:00 - 14:30</b>	<i>Working lunch</i>
<b>14:30 - 16:00</b>	Tour of the Faculty (library, laboratories, student services, international office, IT services, classrooms) and participation in teaching classes
<b>16:00 - 16:15</b>	<i>Internal meeting of the panel members</i>
<b>16:15 - 17:00</b>	Organisation of additional meeting on open questions, if needed

	Thursday, 7 <sup>th</sup> June 2018
<b>9:00 – 09:45</b>	Meeting with vice deans for science and international relations and cooperation
<b>9:45 – 10:45</b>	<i>Internal meeting of the panel members (Document analysis)</i>
<b>10:45 – 11:30</b>	Meeting with the heads of research projects
<b>11:30 – 11:45</b>	<i>Internal meeting of the panel members</i>
<b>11:45 – 12:30</b>	Organisation of additional meeting on open questions, if needed
<b>12:30 – 13:30</b>	<i>Working lunch</i>
<b>13:30 – 14:00</b>	<i>Internal meeting of the panel members</i>
<b>14:00 – 14:15</b>	Exit meeting with the dean, vice-deans and secretary

## ***SUMMARY***

The Panel was generally impressed with the achievements of the Faculty. They felt the overall atmosphere was great, and there is a sense of pride belonging to the Faculty for both, the teachers and students. The Faculty is clearly characterised by its national and regional reputation. Its teachers and students are of the highest calibre, and the educational programme offered is very strong and at par with many top universities worldwide. The scientific achievement is excellent, particularly with the success of being awarded several internationally competitive research projects. The laboratory facilities are very appropriate and well maintained; and they are adequately used for both education and research. The Panel noted that the Faculty has strong links with several external stakeholders who are very supportive of its mission, and is active in different professional organizations within the society. It organizes several international conferences and offers many lifelong learning programmes that are well attended by civil engineering professionals. The Faculty has clearly made progress since the last accreditation, and is in the right track to improve its performance.

While the achievements of the Faculty are clearly noteworthy, further work needs to be conducted in order to achieve international recognition. The Faculty needs to better highlight its accomplishments by improving its website content. The Faculty needs to continue providing incentives for its teachers to publish in high quality journals with high impact factors, aggressively apply for international research projects, present their findings in international conferences and workshops, and participate in international mobility programmes. In particular, development of a clear research strategy and investment in expanding the research administration support are key elements to continue to achieve success in obtaining research awards. Expansion of the English-based course offering will further attract international students and help to integrate them within the Faculty. Uniformity between departments with respect to the workload and criteria for advancement needs to be respected. A clear and well-defined quality assurance programme needs to be formalized; this will aid in identifying potential problems and proposing corresponding remedies to improve the performance. Finally, the Faculty needs to seriously adopt the recommendations proposed in previous accreditation visits; these recommendations are reality-based and well intentioned guidelines for the definition of measures and actions for improvements.