



agency for science and higher education

**REPORT
OF THE EXPERT PANEL
ON THE

RE-ACCREDITATION OF
THE FACULTY OF ENGINEERING
UNIVERSITY OF RIJEKA**

Date of site visit:

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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 Engineering University of Rijeka.

Members of the Expert Panel:

- Professor Osman Turan, University of Strathclyde Glasgow, United Kingdom of Great Britain and Northern Ireland, **chair of the expert panel**,
- Professor Bojan Jerbić, Faculty of Mechanical Engineering and Naval Architecture University of Zagreb, Republic of Croatia,
- Associate professor Kruno Miličević, Faculty of Electrical Engineering, Computing and Information Technology Josip Juraj Strossmayer University of Osijek, Republic of Croatia ,
- Professor Donald Sannella, School of Informatics, The University of Edinburgh, United Kingdom of Great Britain and Northern Ireland,
- Matej Buntić, univ.bacc.ing.mech, student, Faculty of Mechanical Engineering and Naval Architecture University of Zagreb, Republic of Croatia.

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

- Management (dean, vice-deans and secretary),
- Self-Evaluation Report committee, Quality Assurance Committee, ECTS coordinator,
- Students,
- Alumni,

- External stakeholders (representatives of professional organisations, business sector/industry sector, professional experts, non-governmental organisations, external lecturers),
- Vice-dean for academic affairs,
- Heads of study programmes,
- Full-time teaching staff,
- Vice dean for research activities,
- Leaders of research projects,
- Teaching assistants.

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 the Faculty of Engineering, University of Rijeka, on the basis of the Faculty of Engineering, University of Rijeka 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, the site visit to the Faculty of Engineering, University of Rijeka, and writing of the Report, the Expert Panel was supported by:

- Frano Pavić, coordinator, ASHE;
- Vlatka Šušnjak Kuljiš, assistant coordinator, ASHE;
- Aleksandar Šušnjar, prof., interpreter at the site visit, external associate.

- Goran Briški, translator of the Report, 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: Faculty of Engineering University of Rijeka

ADDRESS: Vukovarska 58, 51000 Rijeka

DEAN: Professor Jasna Prpić Oršić, Ph.D.

ORGANISATIONAL STRUCTURE:

The Faculty has 11 departments. Within those departments there are 38 chairs and 50 laboratories; there is also the Computer Centre, the Library, the Accounting Division, the Commercial and Purchasing Office, the General and Personnel Office, the Students' Registrar and Affairs Office, and the Technical and Maintenance Services.

The Faculty consists of the following organizational units:

1. Dean's Office
2. Departments
 - Department of Automation and Electronics
 - Department of Naval Architecture and Ocean Engineering
 - Department of Electric Power Systems
 - Department of industrial engineering and management
 - Department of Mechanical Engineering Design
 - Department of mathematics, physics, foreign languages and kinesiology
 - Department of materials science and engineering
 - Department of fluid mechanics and computational engineering
 - Department of Computer Engineering
 - Department of Engineering Mechanics
 - Department of Thermodynamics and Energy Engineering
3. Sections (chairs - part of Departments)
4. Library
5. Computer Centre
6. Professional Service
 - General and Personnel Office
 - Student Records Office
 - Accounting Division
 - Commercial and Purchasing Office

STUDY PROGRAMMES:

Undergraduate university study programmes:

- Computer Science Undergraduate university study programme
- Electrical Engineering Undergraduate university study programme
- Mechanical Engineering Undergraduate university study programme
- Naval Architecture Undergraduate university study programme

Graduate university study programmes:

- Computer Science Graduate university study programme
- Electrical Engineering Graduate university study programme
- Mechanical Engineering Graduate university study programme
- Naval Architecture Graduate university study programme
- Engineering and Material Physics (Joint graduate university study programme)

Postgraduate (doctoral) university study programmes:

- Electrical Engineering Postgraduate (doctoral) study programme
- Postgraduate (doctoral) study programme in the area of Technical Sciences, in the fields of Mechanical Engineering, Naval Architecture, Basic Technical Sciences and Interdisciplinary Technical Sciences

Undergraduate professional study programmes:

- Electrical Engineering Undergraduate professional study programme
- Mechanical Engineering Undergraduate professional study programme
- Naval Architecture Undergraduate professional study programme

NUMBER OF STUDENTS:

Based on the Analytical self-analysis document on page 23, Table 3.1. Number of students per study programme for the current academic year:

Study programme name	Full-time students	Part-time students
Naval Architecture (119)	108	0
Mechanical Engineering (120)	563	0
Naval Architecture (121)	35	0
Electrical Engineering (122)	149	9
Mechanical Engineering (123)	268	6
Naval Architecture (124)	34	13
Electrical Engineering (125)	194	36
Mechanical Engineering (126)	205	28

Electrical Engineering (127)	319	0
Postgraduate doctoral study programmes in the area of Technical Sciences, in the fields of Mechanical Engineering, Naval Architecture, Basic Technical Sciences and Interdisciplinary Technical Sciences (128)	35	0
Computer Science (129)	186	0
Engineering and Material Physics (130)	7	0
Computer Science (131)	108	0
Electrical Engineering (132)	23	0
Total	2234	92

NUMBER OF TEACHERS:

The structure of teachers is given in Table 4.1.a in the appendix to the Self-evaluation on page 17.

Staff	Full-time staff	Cumulative employment	External associates
Full professors with tenure	22	1	2
Full professors	12	1	8
Associate professors	20	-	-
Assistant professors	21	1	4
Scientific advisor (permanent/with tenure)	-	-	-
Scientific advisor	-	-	-
Senior Research Associate	-	-	-
Research Associate	-	-	-
Teaching grade	8	-	9
Assistants	30	1	32
Postdoctoral researcher	13	-	1
Employees on projects	-	-	-
Expert assistants	2	-	-
Technical staff	-	-	-
Administrative staff	42	-	-
Support staff	-	-	-

SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

Short description was based on the Self-evaluation document on page 5.

The tradition of higher education in Rijeka dates all the way back to 1627, and the start of systematic education of engineers in this area is marked by the decision to move the Imperial Royal Naval Academy from Trieste to Rijeka in 1854. This decision introduced the regular four-year study covering the construction of iron ships and steam engines for the Austrian army; the study programme was active until the period following World War I. The foundations of the Faculty of Engineering are also found in the engineering achievements in our city and the region, such as the invention of the torpedo in 1866, first images of the bullet in flight in 1886, the birth and scientific discoveries of the world-famous seismologist and meteorologist, Andrija Mohorovičić, and the development of key elements in shipbuilding, mechanical engineering, and the power industry.

The Faculty was founded in 1960 as the Faculty of Mechanical Engineering. After the initial education of mechanical engineers, in 1969/70 the Faculty introduced the programme for naval architecture engineers and changed its name to Faculty of Mechanical Engineering and Naval Architecture. This remained its name until 1973 when it changed to the Faculty of Engineering. In 1971/72 the Faculty began carrying out the study programme in civil engineering, which in 1976 developed into an independent organisation with the establishment of the Faculty of Civil Engineering.

The Faculty carries out university undergraduate and graduate study programmes in the subjects of mechanical engineering, naval architecture, electrical engineering, and computing and vocational undergraduate study programmes in the subjects of mechanical engineering, naval architecture, and electrical engineering, as well as a three-year third cycle education that enables the acquisition of a doctoral degree in the field of engineering sciences, in the subjects of mechanical engineering, naval architecture, electrical engineering, computing, basic engineering sciences, and interdisciplinary engineering sciences.

The study programmes at the Faculty of Engineering are organised in line with the Bologna model 3 + 2 + 3, meaning that education is delivered in an undergraduate university study for three years, by which the student acquires 180 ECTS credits, then graduate university study for two years, by which 120 ECTS credits are acquired. The postgraduate university (doctoral) study for three years is worth 180 ECTS credits.

Apart from the above-mentioned programmes, there are also undergraduate vocational study programmes that take three years and are worth 180 ECTS credits.

BRIEF ANALYSIS OF THE INSTITUTIONAL ADVANTAGES AND DISADVANTAGES

ADVANTAGES OF THE INSTITUTION

1. The location of the Faculty is advantageous for regional economy and Naval Architecture in particular.
2. The Faculty provides an interdisciplinary teaching and research environment.
3. The study programmes meet society's needs and most graduates find employment.
4. Teachers are dedicated and open to the students.
5. The distribution of ECTS credits is well balanced.

DISADVANTAGES OF THE INSTITUTION

1. There is a lack of systematic involvement of students, alumni and stakeholders in planning activities and improvement of study programmes.
2. Space, equipment and the entire infrastructure are not at a high enough level to achieve the full potential of the institution.
3. Updating of learning outcomes does not take sufficient account of industry needs, particularly regarding generic transferable skills.
4. Scientific productivity and participation in research projects are not at a sufficient level.
5. There is a lack of strategic planning at the Faculty level and of a vision for internationalisation.
6. Teachers are generally overloaded with teaching, which impacts research productivity and international rankings.

LIST OF INSTITUTIONAL GOOD PRACTICES

EXAMPLES OF GOOD PRACTICE

1. There are good individual efforts in establishing cooperation with industry.
2. The HEI invests its own surplus money for teaching infrastructure improvement.
3. There is high mobility of teachers.
4. The HEI strongly supports and helps students and employees with disabilities.
5. Publication of scientific papers is stimulated systematically.

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 of Engineering of the University of Rijeka (HEI) has established a functional internal quality assurance system in line with ISO 9001. The HEI has adopted the university's strategy and quality assurance policy as part of its strategic management, and has been implementing and monitoring the achievement of its objectives. The HEI has developed a research strategy for 2016-2020, but the HEI has not developed a strategy for teaching, human resources and student experience. The HEI has been collecting data annually and has clear procedures and internal evaluations of quality including student progress, staff advancement, and evaluation of study programmes with student evaluations of lecturers. The Faculty has a well-structured system in place for dealing with unethical behaviour but staff needs to be trained to implement procedures in a unified manner. The HEI has studied the recommendations listed in the previous reaccreditation report and has taken action to implement most of them but still there are a number of outstanding items. Currently, there is no structured link with industry and alumni stakeholders and their involvement in development of Faculty strategies and activities is very limited. The Faculty intends to set up a stakeholder advisory committee. The HEI does not have a clear definition of its social role and this is reflected in the HEI staff's lack of clear understanding of the Faculty's social role. This is further supported by the limited examples of engagement activities.

Recommendations for improvement

The HEI is recommended to develop Faculty-specific strategies for teaching, student experience and human resources in order to have a clear road map with specific targets and measures to achieve these targets. The Faculty is recommended to engage with alumni and external stakeholders to determine its social role, enhance quality and quality assurance with regards to the courses, student experience, employability and development of lifelong learning, as well as to attract high quality candidates to the courses. The HEI is also recommended to develop an internationalisation strategy with measurable key performance indicators.

Quality grade

Minimum level of quality

II. Study programmes

Analysis

The general strategic goals of all study programmes carried out at the Faculty are aligned with the Faculty's mission and vision. The learning outcomes are sufficient and beneficial. There is a need for delivery of more practical knowledge in combination with theoretical knowledge. The employers from industry consider that some interdisciplinary knowledge related to business, project management, presentation, and communication skills should be included in the study programmes. The given learning outcomes are appropriate, but sometimes some of the specified outcomes are not accomplished during the semester. There is an impression that the Faculty is rather isolated from the local community. The students feel that they are not able to influence changes while the local community and alumni are not included in any kind of procedures or planning of the HEI's activities and study programmes. Student practice is an integral part of the study programmes, but is too short to be efficient. Lifelong learning is not sufficiently conceived and exists only as a set of ideas.

Recommendations for improvement

The teaching methodology and subjects should develop toward more project-based and problem-solving methods that will better combine theoretical knowledge and real problems from industry. The HEI needs to establish a stronger and more formal relation with stakeholders and alumni, giving them a role in efficiently influencing the planning, proposing, and improvement of the study programmes. Students must be involved in the process of designing study programmes through more active participation/feedback mechanisms. The HEI should reconsider the redefinition of student practice. Lifelong learning should be a strategic issue for the HEI but harmonised with the needs of the local economy.

Quality grade

Satisfactory level of quality

III. Teaching process and student support

Analysis

The admission criteria are well defined. The HEI gathers the information on students' progress using questionnaires and the data is analysed but is not provided to students afterwards. The teaching methods are mostly old-school and there is a lack of practical knowledge and implementation. There are several students' associations. Support for students from vulnerable and under-represented groups is ensured. Students can get international experience from Erasmus and CEESTE programmes but they rarely enrol because ECTS credits are poorly recognised. The HEI ensures adequate study conditions for foreign students. The Diploma and Diploma Supplement documents are issued appropriately. The data about the employment of graduates is monitored by the Croatian employment bureau. However, contact with alumni is rather limited.

Recommendations for improvement

The information about students' progress, study programmes, etc. and actions taken afterwards should be made more visible. The HEI should improve teaching by use of more project-based and problem-based methods even in the basic subjects of undergraduate studies. Professors should be more flexible when recognising ECTS credits from other institutions. The HEI should try to sign more agreements with faculties having similar study programmes. The HEI should offer more courses in English and invite guest lecturers from abroad to expose the students to different teaching techniques/practices in other institutions. Contact with alumni should be on a more official level and more frequent.

Quality grade

Satisfactory level of quality

IV. Teaching and institutional capacities

Analysis

The space, equipment and the entire infrastructure (laboratories, IT services, work facilities etc.) are adequate for the delivery of study programmes, ensuring the achievement of the intended learning outcomes and the implementation of scientific activity. The HEI continuously makes new investments in equipment.

Some individual teachers have significant scientific productivity and cultivate cooperation with industry. However, an imbalance of the total work load (teaching, research projects, mentorships, organisational and administrative tasks, mobility activities, cooperation with industry, etc.) among teaching staff undermines the possibility of a full utilisation of human resources.

The teaching and non-teaching staff does not participate sufficiently in professional development opportunities.

The procedures of recruitment, advancement and re-appointment are carried out according to the law and University regulations.

Recommendations for improvement

A thorough analysis of the total work load (teaching, research projects, mentorships, organisational and administrative tasks, mobility activities, cooperation with industry, etc.) among teaching staff should be carried out in order to try to balance their workload accordingly. The HEI should decide about possible employment priorities financed through the funds of the Faculty due to the ban on new employment of officials and employees in public service by the Ministry of Education and Science.

The higher education institution should define incentives or other initiatives to encourage the teachers and non-teaching staff to use the available opportunities for professional development.

Laboratories for research and teaching can be further improved to enhance research activities as well as the student experience.

The recruitment, advancement and re-appointment procedures should be improved by the introduction of a universal framework (at the Faculty level or department level) and the evaluation process by expert commissions.

Realization of the recommendations listed above, i.e. corresponding criteria and priorities, should reflect the strategic goals of the Faculty and/or department. Therefore, the corresponding strategy documents should be defined, which should also be the basis for future financial investment plans.

Quality grade

Satisfactory level of quality

V. Scientific/artistic activity

Analysis

The quantity and quality of scientific publications are adequate and have been improving recently due to incentives for publications in highly-ranked journals. The HEI is active in the promotion and popularisation of science and its scientific activities. It cooperates with industry through professional/commercial projects and makes use of the University's support for technology transfer. The potential of the HEI for internationally recognised research is significantly under-utilised, with only a modest number and value of funded scientific and professional projects.

The HEI's research strategy is adequately aligned with its vision and with the University's strategy. However, there is no plan of activity to achieve specified performance targets or to address weaknesses and threats, and there appears to be no retrospective reporting on performance against targets at the Faculty level. The resources and infrastructure for scientific activity are at a minimum satisfactory level. The HEI invests its own resources to improve its facilities. The HEI's equipment is used in teaching and students are involved in scientific and professional projects, leading to students being co-authors of scientific publications at a rate that has been increasing in recent years.

Recommendations for improvement

The trend toward improvement in publication figures should be monitored and corrective action taken if it does not continue. Increasing the number of projects is recommended as a basis for increasing scientific productivity, and measures should be taken to encourage lecturers to apply for grant funding. Plans for consulting industry stakeholders about the needs of the labour market should be accelerated. There should be some planning of activity to achieve the targets in the HEI's research strategy and to address the weaknesses and threats that it identifies. Plans for investment of financial reserves could include investment in human resource to foster an increase in grant applications.

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

The Faculty of Engineering of the University of Rijeka has established a functional internal quality assurance system in line with ISO 9001. The quality assurance system for the Faculty of Engineering is set up in accordance with the Standards and Guidelines for Quality Assurance in the European Higher Education Area. The internal quality assurance system includes and covers all activities.

Although the quality assurance committee appears to have a stakeholder representative, meeting with stakeholders and alumni indicated that their practical involvement in quality assurance is not realised. Similarly, representatives of professional organisations are not involved in the committee.

The Faculty of Engineering adopted the university's strategy and quality assurance policy as part of its strategic management, and has been implementing and monitoring the achievement of its objectives. The Faculty has developed a research strategy for 2016-2020 in line with the university strategy with specific faculty objectives. Achievements were clearly presented in the self-evaluation report. However, there is no faculty strategy developed for teaching and student experience, as they rely on the university strategy.

The Engineering Faculty has developed an action plan based on the university strategy including identification of responsible persons with specific goals. However, the Faculty has not carried out a SWOT analysis, except for its research strategy.

The Engineering Faculty has been collecting data annually and has clear procedures and internal evaluations of quality including student progress, staff advancement, and evaluations of study programmes with evaluations of lecturers by the students. These evaluations are recorded systematically and are used in the analysis to improve the activities and the system. However, how improvement decisions are taken and implemented is not clear.

It is clear that data is collected for various activities using well-defined techniques to assess quality. These data were presented in the documents which were made available to the panel. The Faculty uses this data to modify its criteria or standards to improve the quality of student experience. For example, they had analysed the dropout rates and increased the entry requirement of freshman in mathematics from B to A. Some new activities are developed such as an open laboratory day to attract higher quality students to engineering or trying to support students for employment through organisation of job fairs.

As there is no specific HEI strategy with specific goals for teaching and human resources, it is not obvious to see a clear commitment to addressing issues regarding human resource policies in terms of employment and personal development of individual staff. They are clearly aware of the issues through the analyses of data but the only action that the Faculty has taken is to stop enrolling new students into the professional study programmes that will reduce the loading of some lecturers. However, the impact of such decision has not been presented.

Recommendations for improvement

- Without having HEI specific strategies for teaching and human resources it is very difficult to see a clear road map with specific measures. Therefore, it is recommended that the HEI prepares specific strategies for teaching, student experience and human resources.
- The HEI is recommended to engage with alumni and external stakeholders to enhance quality and quality assurance with regards to the courses, student experience, employability and development of lifelong learning, as well as to attract high quality candidates for the courses.
- As it was mentioned in the mission statement, the HEI should be developing an internationalisation strategy with measurable key performance indicators.

Quality grade

Minimum level of quality

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

Analysis

It is pleasing to see that the HEI has studied the previous recommendations and has taken action to implement the recommendations listed in the previous evaluation report to enhance quality, as is visible from the action plan for 5 year period and from annual reports. The Quality Assurance Committee has acted on the recommendations from the previous evaluation and proactively reviewed and implemented a number of actions to enhance the quality of learning as well as monitoring and making sure that its quality assurance standards are implemented by different committees.

The Faculty has made some changes to the undergraduate study programmes by reviewing the study programmes in similar institutions in Italy, Austria and Slovenia, and updating certain aspects. However, the study programmes have room to improve. Furthermore, the Engineering Faculty has increased the enrolment standards of the incoming students for mathematics from B to A to address the high failure and dropout rates. Although there is limited data, indications show that it has improved the pass rates. There are good data collection and data analysis procedures; however, it is not obvious whether recommendations and outcomes of data analysis are implemented.

The HEI has taken very good action to introduce supplementary teaching for those students who do not have the highest grade or are in need of knowledge enhancement. This was really appreciated by the students.

The staff of the HEI is participating in the University's programme for pedagogical qualification for young teachers in small numbers.

The HEI is making systematic use of an e-learning platform and e-resources to support teaching. However, wider online access to international publications for research purposes is limited for financial reasons.

The HEI has reviewed the teaching capacity and overloading of the existing teaching staff. As a result they stopped enrolment of students onto the professional studies programmes to reduce the teaching load but it is stated that they are not able to employ new teaching staff due to governmental restrictions.

Recommendations for improvement

Despite the significant effort put in by the HEI to implement the recommendations there are still outstanding elements which should be addressed and areas that should

be further improved considering contemporary practice in institutions in other EU countries. For example:

- Despite the recommendation to minimise questionnaire based monitoring and to focus instead on personal communication and face to face interaction, this has not been put into practice. This is very important to understand the underlying problems and to implement the right solutions. Interviews with students confirmed this gap.
- Despite some efforts by the HEI, teaching staff are really overloaded which prevents them from fulfilling their potential in research areas. This is in turn affecting the University of Rijeka's international standing. It is recommended that the head of studies should visit sister departments in countries like USA, UK, Norway, Finland and Germany and see how they remain in the forefront in rankings.
- A more flexible system of continuous assessment (representing 70% of grade) should be adopted in order to make the education system more stimulating and efficient.

Quality grade

Satisfactory level of quality

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

Analysis

The HEI has well-structured policies, regulations and tools to address any issues with regards to unethical behaviours, intolerance and discrimination. Students are aware of these and the effectiveness of the current system is presented by providing a number of incidents that the Faculty had to deal with. The HEI should be praised for taking plagiarism so seriously by utilising tools such as Turnitin to prevent plagiarism, which is widely used in highly ranked institutions.

Recommendations for improvement

It is important that all lecturers should be trained to implement the policies and regulations strictly in a unified manner so that students believe in the system, especially for cheating during exams.

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

Study programmes and details of the individual courses were available in both Croatian and English in a clear format that can be understood.

Following meetings with the stakeholders and alumni as well as with faculty management, it is clear that there is no established/structured link with stakeholders and alumni. A meeting with the alumni and stakeholders group revealed that they were not informed about the admission criteria, enrolment quotas, study programmes or learning outcomes. The management intends to set up a stakeholders' advisory board to address this issue. It is felt that stakeholders and the Faculty are detached from each other with the Faculty being too inward looking. Stakeholders are very keen to be involved and to support the HEI on these issues. Only a small number of individual academics are linked to stakeholders.

Recommendations for improvement

The Faculty management stated that they are planning to establish a stakeholder advisory group to engage with industry in a more structured way. This plan is very encouraging but it should be executed urgently with a carefully planned engagement strategy.

Quality grade

Satisfactory level of quality

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

Analysis

After a series of meetings with various HEI members and committees as well as stakeholders, it can be stated there is engagement with the community but in a limited capacity. A couple of examples of good engagement are listed but the number is extremely small. Teachers do not seem to fully understand the social role of the HEI.

Recommendations for improvement

- The HEI has the potential to bring a lot to the community in the region but it needs to define its specific social role more clearly.

- HEI members responsible for supporting the local community should visit other universities in Croatia as well as in other European countries to see how these universities have been fulfilling their social role.
- The HEI needs to meet with the various stakeholders to develop a strategic plan on how they can be engaged in industry, the local community, schools and other establishments and develop an action plan with a clear timeline.

Quality grade

Minimum 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

The University of Rijeka 2014 – 2020 Strategy determines general strategic goals that are followed by the Faculty of Engineering. The general strategic goals of all study programs carried out at the Faculty are aligned with the Faculty's mission and vision. Considering the demands of the labour market and the recommendations of the Croatian Employment Service, the University of Rijeka 2014 – 2020 Strategy includes in its objectives and tasks the need to increase the number of students in the engineering field. No clear justification and analysis of HEI resources required to deliver these objectives is provided.

In the Naval Architecture study programme it is evident that the list of compulsory courses does not include Marine Engines which is offered only as an elective.

The graduates find employment mostly in local companies. The employers are generally satisfied with the competences and profiles of the engineers graduating from the HEI.

Recommendations for improvement

HEI should develop its own strategy which must reflect the specific needs of the local economy with respect to the teaching programmes, research and particularly lifelong learning.

Quality grade

Satisfactory 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 outcomes are written in line with the guidelines of the Act on Croatian Qualification Framework. The Faculty's quality assurance system was issued a certificate by the ASHE Accreditation Board (according to memo from ASHE, Class: 602-04/10-09/0010, Reg. no.: 355-02-03-12- 19).

The students are informed about the learning outcomes and their opinion about them is positive, but sometimes some of the outcomes specified in course descriptions are not achieved/accomplished during the semester.

The graduates and alumni consider that the study programmes are sufficient and beneficial for them.

There is an evident lack of practical knowledge in combination with theory and knowledge related to industry needs.

Stakeholders are generally satisfied with the knowledge level of the engineers graduating from the HEI. The employers from industry consider that some interdisciplinary knowledge related to business, project management, presentation, and communication skills should be included in the study programmes. Industry also needs bachelors, but not educated mostly on theoretical knowledge as is now the case.

Recommendations for improvement

The teaching methodology and subjects should develop toward more project-based and problem-solving methods that will better combine theoretical knowledge and real problems from industry. The content of courses should be modernised so as to include soft skills and practical knowledge better related to the needs of the local economy. More elective courses held in the English language are required.

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

The evaluation of learning outcomes is carried out according to the evaluation criteria described in the study programmes for each course individually. Assessment is carried out by applying the European Credit Transfer System (ECTS) and the numerical system defined in the University of Rijeka Regulations on study programmes.

The HEI's quality assurance system is used to monitor and improve the quality of each course or module, the whole study programme, and the organisational and administrative support.

Assessment criteria are defined by the lecturer for each of the courses separately and this information is publicly accessible on the Faculty's website. Assessment is based on previously defined and publicly available learning outcomes for each course. Some defined assessment criteria indicate that students are overloaded by constant partial exams or different types of final exams.

The meetings with the students, stakeholders and alumni revealed that the learning outcomes are mostly achieved but students are missing some related practical skills.

Recommendations for improvement

According to the recommendation from 2.2, alternative assessment methods based on project-based knowledge acquisition should be considered. These can foster the students' general and soft skills, combining theoretical and practical knowledge also in order to improve the practical elements of learning outcomes.

Quality grade

Satisfactory 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

Alumni and stakeholders are not involved in any kind of procedures or planning of the HEI's activities and study programmes, even though there is an Alumni Club which is from time to time informed about specific lectures held at the Faculty.

Stakeholders would like to be involved but they do not have opportunities to influence the study programmes. There is some cooperation through joint R&D projects. Usually industry approaches the Faculty with cooperation initiatives. In order to change this situation, the HEI has a plan to establish an Advisory Board. Something similar exists at the University level in the form of the University Council which gathers together the most prominent representatives from academia and the local community. Stakeholders support the idea of the Advisory Board if they will have the opportunity to influence the study programmes.

The students express their opinions about the study programmes, teachers and other related issues through the regular surveys, although they have the impression that they are not able to influence changes.

HEI does not have a strategy, regulations or any defined procedure concerning opening, closing or improving particular study programmes.

Recommendations for improvement

The HEI needs to establish a stronger and more formal relation with stakeholders and alumni, giving them a role in efficiently influencing the planning, proposing, and improvement of the study programmes. Students must be having more influence in the process of designing study programmes. Student survey procedures are implemented, but their role should be more clearly defined and presented to the students, who should be made aware of the measures taken on the basis of their objections, opinions, needs and suggestions.

Quality grade

Minimum level of quality

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

Analysis

Continually and annually, student surveys conducted via the Faculty's internal quality assurance system check the estimates of allocated ECTS credits. The question in the survey, "Alignment of workload with ECTS credits" enables students to estimate the alignment of allocated ECTS credits with individual learning outcomes using a scale from 1 to 5. This kind of feedback for each of the courses regarding the students' assessment of ECTS allocation does not show any significant problem. In addition, the impression is that students generally feel that the ECTS allocation is fair.

Recommendations for improvement

None

Quality grade

High level of quality

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

Analysis

Student practice is an integral part of the study programmes of undergraduate university and vocational study and graduate university study. All undergraduate university studies have a mandatory course called Practice I in the 4th semester, and in graduate university studies a mandatory course Practice II in the 2nd semester. Students of vocational studies have to take Practice I in the 4th semester and Practice II in the 6th semester. Practice I in all studies and Practice II in university graduate studies are carried out for 15 working days and are worth 5 ECTS credits. Practice II in vocational studies is carried out for 30 working days and is worth 10 ECTS credits.

Students show interest in practice within local companies. The limited number of adequate companies where the students can learn something about new technologies or practice the acquired skills, represents a problem for providing appropriate internship positions. The students are mostly supposed to find opportunities for practice on their own.

Another problem is the duration of the practice. The common conclusion, from students and companies, is that it should be longer than three or six weeks, but this has implications on the implementation of study programmes. Because of that the practice is not efficient or systematic. Stakeholders suggest at least three months with defined outcomes, which was also recommended in the last evaluation.

Recommendations for improvement

HEI should reconsider the expansion of student practice through more practical lessons throughout the study period, combining the Faculty's laboratories and the industrial facilities where students in smaller groups can perform practical exercises in a real environment. The outcomes of practice must be precisely defined to improve the efficiency of this specific part of the programme.

Quality grade

Minimum 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

Lifelong learning is not sufficiently or systematically conceived and exists only as one programme (Training in energy certification of buildings). The differential semester (Supplemental programmes) is inappropriately included as a lifelong learning programme. The criteria for enrolment into the differential semester are not clearly defined regarding the ECTS credit numbers (150 or 180 ECTS), the subjects and corresponding contents do not close the gap between professional and university study, and the number of teaching hours seems to be too low with respect to the content. Alumni express a need for lifelong learning programmes but there is no initiative from the Faculty. The industry has also needs for lifelong learning, particularly in interdisciplinary topics and communication skills. Besides, there are no mechanisms or procedures that include alumni and representatives from industry in proposing the lifelong learning topics.

Recommendations for improvement

Lifelong learning should be a strategic issue for the HEI but harmonised with the needs of local economy. The recommendation is to find more realistic cooperation agreement frames with stakeholders with the intention to establish long-term cooperation which will lead to better shaping of research and teaching subjects and better understanding of mutual needs and objectives. There should be a thorough revision of the Supplemental programmes.

Quality grade

Minimum 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 admission criteria are clearly defined and are available online on the Faculty's webpage, and there is no evidence of inconsistency. The admission criteria were made stricter in 2015 by requiring an A-grade in the state matura exam in mathematics

instead of a B-grade, according to documents from the First meeting of the Faculty's Council in 2014/2015. The transition between high school and university seems to cause some problems, although preparatory seminars are held and are found useful, according to the meeting with the students. Students also find the admission criteria to be appropriate for the study programme. The vast majority of students who finish undergraduate study continue their study on the graduate level, as is seen from MOZVAG Table 3.3. MOZVAG Table 3.2 shows that students enrolling on the Naval Architecture study programme have lower average grades on the state matura exam than students enrolling in other programmes.

Recommendations for improvement

The HEI should highlight its social role and have a more intense cooperation with high schools and even elementary schools in the region thus better informing and attracting its future students from a young age. With a larger number of highly motivated applicants, the HEI could apply stricter criteria for enrolment.

Quality grade

Satisfactory 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 procedure of gathering information and data on student progress is set according to the guidelines of the Faculty of Engineering Handbook for Quality and the University of Rijeka Handbook for the Quality of Study. According to the meeting with students, the visibility of implemented changes based on the analysis of gathered data is rather limited. The measures based on analysed data are not systematically established. There is no strategy, action plan or regulation for acting according to the analysed data despite the recommendations of the previous reaccreditation report.

Recommendations for improvement

The visibility of gathered data, analysis and related measures should be improved and students must be informed about them more efficiently. Also, there should be a clear action plan established annually on the basis of the analysis.

Quality grade

Minimum level of quality

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

Analysis

The meetings with the faculty's management and the teaching staff showed that student-centred learning is not clearly understood by either of them. However, students informed the panel that teachers are almost always available for them. Meetings with alumni, stakeholders and students as well as a tour of the facilities shows that there is limited practical work during studies and that some laboratories are not optimal for gaining practical skills in some disciplines. Teaching methods are rather traditional and lack problem-based and project-based learning. Foundational subjects are not sufficiently connected with more practical subjects at higher years of study. All students have the possibility to shape their study programme by choosing elective courses, as can be seen in the study programme documents, and by choosing companies in which they do their internship.

Recommendations for improvement

The HEI should improve teaching by employing more project-based and problem-based methods even in the basic subjects of undergraduate studies. In addition, the HEI should reconsider the content of the courses in order to make the study programmes more coherent. Equipment for laboratories should be renewed more frequently to improve the quality of teaching.

Quality grade

Minimum level of quality

3.4. The higher education institution ensures adequate student support.

Analysis

Even though there is an established career office, guidance on studying and career opportunities is mostly provided on an individual level. Nevertheless, the students are satisfied with teachers' involvement according to the meeting with the students. The Faculty supports student associations, societies and projects such as Formula students. Also, support to the diverse student population is adequate. There is information about support services on the official webpage, but that seems not to be the optimal way of informing the students. The faculty employs a sufficient number of qualified staff working in the Dean's Office, Students' Registrar and Affairs Office, Accounting Division, Procurement and Commercial Office, General and Personnel Office, and Technical and Maintenance Services.

Recommendations for improvement

Students should be more efficiently informed about the various forms of support.

Quality grade

Satisfactory level of quality

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

Analysis

The support to students from vulnerable and under-represented group is exemplary. The teaching process is adjusted to the individual needs of students from vulnerable and under-represented groups. For instance, the committee was told by the students that students with dyslexia are given additional time during examination. Also, the facilities are well-suited for people with disabilities which was seen during the tour of the Faculty.

Recommendations for improvement

None

Quality grade

High level of quality

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

Analysis

Students are informed about the opportunity to enter the Erasmus and CEEPUS programmes via the official webpage and by staff. Both programmes have coordinators. Students report that the criteria for recognition of ECTS credits for mandatory subjects are too strict. Students complete a survey after they finish their CEEPUS programme but not after they finish Erasmus according to the self-evaluation report. Also, the study programmes contain foreign languages as mandatory courses which aid acquisition of knowledge for international experience.

Recommendations for improvement

Professors should be more flexible when recognising ECTS credits from other institutions. The HEI should try to sign more agreements with faculties having similar study programmes.

Quality grade

Satisfactory level of quality

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

Analysis

The Faculty's website has information about enrolment available in English. Some courses are available in English. There is a modest number of foreign students, according to MOZVAG Table 3.6. New study programmes in English are in preparation and are due in 3 years, according to the meeting with the dean, vice deans and secretary. Croatian language courses are delivered for foreign students at the level of the University of Rijeka. There are surveys about satisfaction and needs for foreign students.

Recommendations for improvement

The HEI should offer more courses in English and invite guest lecturers from abroad.

Quality grade

Satisfactory level of quality

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

Analysis

The criteria and methods for evaluation are published before the beginning of a course but the weighting of the assessment components is not published in the study programme document. According to the meetings with students, interpretation of university rules for continuous assessment causes several important problems in some cases:

- There are overly strict rules for progression to the final exam.
- There is an over-reliance on exams as assessment method during the semester, leading to excessive workload.

Examination procedures are modified for students with disabilities. Students receive feedback on the results of their assessments.

Recommendations for improvement

A wider variety of assessment methods should be used to enhance learning and to reduce students' workload. Complementary assessment methods should be used during the semester as prerequisite for progression to the final exam.

Quality grade

Satisfactory level of quality

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

Analysis

The Diploma and the Diploma Supplement are issued appropriately. There is a small difference between the learning outcomes written in the Diploma Supplement and the ones in the study programmes.

Recommendations for improvement

The Diploma Supplement should have the same learning outcomes as defined in the study programmes.

Quality grade

Satisfactory level of quality

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

Analysis

The employability of the Faculty's graduates is analysed by using the data from the Croatian employment bureau, according to the meeting with faculty's management and the data shown in MOZVAG Table 3.7. Students are informed about opportunities to find employment after graduation but this is mostly done on an individual level. According to the meeting with alumni, contact with alumni is infrequent and mostly on a personal basis. High employability of graduates, as MOZVAG Table 3.7 shows, indicates that enrolment quotas are aligned with industry's needs.

Recommendations for improvement

The contact with alumni should be made official by setting up a committee or something similar. Also, the data about employability should be gathered by the HEI by staying in contact with all of its alumni.

Quality grade

Satisfactory level of quality

IV. Teaching and institutional capacities

4.1. The higher education institution ensures adequate teaching capacities.

Analysis

The higher education institution has a sufficient number of teachers [Table 4.1a], i.e. researchers according to the Ordinance on conditions for issuing license for scientific activity, conditions for reaccreditation of scientific organizations and content of license. There is a high teaching workload (Table 4.3. Teachers and assistants at the HEI in the current academic year), which has been confirmed during the meetings carried out at the Faculty. However, from AY 2018/2019 the Faculty's lecturers will see a decrease in their workload as no new students will be admitted to the first year of undergraduate vocational studies.

Recommendations for improvement

In addition to existing plans to solve the problem of excessive teaching workload, it is necessary to balance the total workload (teaching, research projects, mentorships, organization and administration tasks, mobility activities, cooperation with industry, etc.) of teaching staff. After analysis at the department level (and/or research group level) a decision should be made concerning possible employment priorities financed through the Faculty's own funds due to the decision on the ban of new employment for officials and employees in public service by the Ministry of Education and Science.

Quality grade

Satisfactory level of quality

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

Analysis

As stated in the self-evaluation document (Chapter 4.2), the procedure of appointment to scientific-teaching positions and corresponding job positions are aligned with the current legal framework and the Regulations on the procedure for the election into scientific and teaching, artistic and teaching, scientific, teaching, and associate titles and to appropriate positions at the University of Rijeka.

All applicants to a job position, based on the publicly announced call, are subject to the evaluation of the Expert Committee regarding various criteria, which are weighted by the Committee itself.

Recommendations for improvement

A framework should be defined for the evaluation process of the Expert Committee that should be universal at the Faculty level or at the level of departments. For example, what range of points can be assigned to the interview with the candidate, to the average grade during the candidate's studies, to the results of knowledge and skills tests, etc. In this way the evaluation process would be more exact. The framework should reflect the priorities and strategic goals of the Faculty and/or Department, which sends a clear message to all stakeholders about the commitment of the Faculty to achieving strategic indicators. This requires the corresponding strategy documents to be defined as well.

Quality grade

Satisfactory level of quality

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

Analysis

As stated in the self-evaluation document (Chapter 4.3), lecturer advancement at the Faculty of Engineering in Rijeka is carried out according to the advancement plan that the Academic Affairs Committee proposes at the beginning of each academic year for the next academic year. This ensures the transparency of the procedure for developing and adopting the advancement plan.

The procedure for election to a higher scientific and teaching title is initiated in line with the corresponding regulations. After the call is issued and the Expert Committee is appointed, the Committee submits a report with their opinion and proposal to the Faculty Council via the Academic Affairs Committee.

Recommendations for improvement

There should be a defined framework for the evaluation process carried out by the Expert Committee. Such framework should be set at the Faculty level or at the level of departments.

The criteria should reflect the priorities and strategic goals of the Faculty and/or the Department, which sends a clear message to all stakeholders about the commitment of

the Faculty to achieving strategic indicators. This requires the corresponding strategy documents to be defined as well.

For example, a uniform criterion could be set for the range of points that can be allocated to scientific results, to participation in various projects (scientific, industrial, etc.), to indicators of teaching and mentoring quality, mobility activities, etc. This way, the evaluation process could be more objective and uniform.

Quality grade

Satisfactory level of quality

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

Analysis

The Faculty of Engineering participates in the Central European University Exchange Programme (CEEPUS) and Erasmus mobility programmes with a high level of teacher mobility (Table 4.5). However, only a small proportion of the teaching staff takes advantage of the other types of professional development, i.e. acquisition of pedagogical competencies, technical and soft skills. Furthermore, the mobility of non-teaching staff is non-existent according to Table 4.6.

Recommendations for improvement

The higher education institution should provide motivation mechanisms and/or initiatives towards the teachers and non-teaching staff to take advantage of the available opportunities for professional development. These mechanisms should reflect the priorities and strategic goals of the Faculty and/or the Department, which sends a clear message to all stakeholders about the commitment of the Faculty to achieving strategic indicators. This requires the corresponding strategy documents to be defined as well.

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 amount of space is sufficient. The equipment is at minimum satisfactory level but is not sufficient to deliver contemporary knowledge on some topics to the students or to conduct cutting edge research. For instance, the average age of computer equipment is 4 years which is rather old, as ideally they should be renewed every 3 years. According to the self-evaluation document (Chapter 4.5) and as confirmed during the visit, equipment is being continuously renewed in recent years. All laboratories used for education are used for scientific activities as well.

There are several student teams at the Faculty (Riteh Racing Team, Riteh Waterbike Team, Adria Hydrofoil Team, Riteh Drone Team) that have adequate space for meetings and professional activities, which encourages students' creativity.

Recommendations for improvement

The investment in equipment and laboratories should be increased to achieve a higher level of education and research quality in a reasonable time period. Increased research and professional activities and their results should be utilised to enhance the teaching activities and learning outcomes.

Quality grade

Satisfactory 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

As stated in the self-evaluation document (Chapter 4.6) and confirmed at the meetings during the visit, the library (including electronic resources and e-learning portal) offers a large number of textbooks and scientific journals/papers, as well as a high level of corresponding equipment (personal computers, reading room, etc.).

Recommendations for improvement

None

Quality grade

High level of quality

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

Analysis

Tables 4.11 and 4.12 show that the higher education institution rationally manages its financial resources with a substantial annual surplus leading to reserves of over 12 million Kuna. However, the lack of a Faculty Strategy results in no clear investment plans and priorities for the future. Investments are made “ad hoc” or according to the University Strategy, which appears to be too general in relation to certain aspects of the Faculty’s mission and vision.

Recommendations for improvement

Define a Faculty Strategy which should be the basis for future income and expenditure plans, including a plan for investment of the surplus.

Quality grade

Satisfactory 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

Teachers and associates are publishing an adequate number of high-quality scientific publications, according to the list in Table 5.1 from MOZVAG. The data presented in Fig. 5.1-5.3 of the Self-Evaluation Report shows a steady and significant increase over the past 5 years.

The HEI has procedures for encouraging high-quality scientific publication, including a 2017 decision to provide rewards, in the form of financial support for research, to lecturers publishing in a JCR Q1-ranked journal, as explained in Sect. 5.1(b) of the Self-Evaluation Report. This measure appears to have been effective according to data presented for the short period since the implementation of the decision in Fig. 5.3.

The HEI keeps appropriate records of publications, including citation data, according to information given in Sect. 5.1(c) of the Self-Evaluation Report. The HEI's scientific

activity is evident in PhD theses according to the list referred to in Sect. 5.1(d) of the Self-Evaluation Report.

According to information in Sect. 5.1(e) of the Self-Evaluation Report and the evidence referred to there, teachers and associates of the HEI actively promote their scientific achievements at conferences in Croatia and abroad. The HEI organises scientific conferences, including both large international conferences and a local conference for – and organised by – doctoral students.

Recommendations for improvement

The improvements to the publication figures over the past 5 years are commendable. The trend should be monitored and corrective action taken if it does not continue. Increasing the number of projects is recommended as a basis for increasing scientific productivity.

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 HEI cooperates with industry, as shown by the data provided in Table 5.3b from MOZVAG on professional/commercial projects. In this way it monitors and takes into consideration the needs of society and labour market in planning its research activities. A closer level of contact, with direct input and advice from relevant industry stakeholders, would be beneficial.

According to information in Sect. 5.2(b) of the Self-Evaluation Report, the HEI has a support system for transfer of knowledge and technologies, via the University of Rijeka's Technology Transfer Office. There is a lifelong learning programme for energy inspection and certification, as explained in Sect. 2.7(b) of the Self-Evaluation Report. The HEI is active in the popularisation of science, and in the organisation of scientific conferences, as detailed in Sect. 5.2(b) of the Self-Evaluation Report. The HEI has an annual plan of specific activities for popularisation of science and of the scientific activities of the HEI.

The HEI's lecturers participate in the activities of a wide range of scientific and professional organisations, according to the lists given in Sect. 5.2(c) of the Self-Evaluation Report.

Recommendations for improvement

The proposed formation of the Advisory Board, or other means of consulting relevant industry stakeholders about the needs of the labour market, should be accelerated. Also, the board should give guidance on promotion of entrepreneurship and commercialisation among students and staff.

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 HEI's lecturers have received university, national and international awards and recognition for their scientific and professional achievements, according to Sect. 5.3(a) of the Self-Evaluation Report and the evidence referred to there.

The HEI holds a modest number and value of scientific and professional projects, according to Tables 5.3a and 5.3b from MOZVAG and information provided in Sect. 5.3(b) of the Self-Evaluation Report. The potential of the HEI for internationally recognized research is significantly under-utilised.

The HEI's lecturers participate as invited lecturers in an adequate number of national and international conferences, according to Sect. 5.3(c) of the Self-Evaluation Report and the evidence referred to there.

The HEI's lecturers participate in the organising committees of national and international conferences and workshops, and in editorial boards of scientific journals, according to Tables 5.4 and 5.5 of MOZVAG and the information given in 5.3(d) of the Self-Evaluation Report. The HEI co-publishes the open access international journal Engineering Review, which is indexed in the World of Science Core Collection.

Recommendations for improvement

Measures should be taken to encourage lecturers to apply for grant funding. Examples are:

- Financial incentives for submitting research project proposals like the existing incentives for publications in high quality journals.
- Administrative support within the HEI for the preparation of research project proposals.

- The HEI should expand their existing international network and use it for establishing research teams.
- Project leadership should be included as an advancement criterion to stimulate research grant applications.

Quality grade

Minimum level of quality

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

Analysis

The HEI's research strategy is adequately aligned with its vision and with the university's strategy, according to Sect. 5.4(a) of the Self-Evaluation Report and the evidence referred to there, and the strategy establishes clear targets for improvements in performance measures.

The scientific research conducted by the HEI is in accordance with its research strategy, according to Sect. 5.4(b) of the Self-Evaluation Report and the evidence referred to there. However, the strategy does not include a plan of activities or organisational changes that aim to achieve the specified targets or to address the weaknesses and threats in the SWOT analysis. Although detailed data concerning the performance measures is collected, there appears to be no explicit retrospective reporting on achieved performance against the targets, only against the targets in the university's strategy.

According to Tables 4.8, 4.9 and 4.10 of MOZVAG, information in Sect. 5.4(c) of the Self-Evaluation Report and observations of the expert panel during visits to the HEI's facilities, the HEI has minimum satisfactory resources for its scientific activities, including laboratories with relevant equipment and a library giving physical or electronic access to the scientific literature.

According to Sect. 5.4(d) of the Self-Evaluation Report, the HEI recognises and rewards the scientific achievements of its employees, including nominating its most prominent researchers for awards, and rewarding publication in JCR Q1-ranked journals.

The HEI continuously improves its scientific activities by appropriate financing, including investment of its own resources in procurement of new laboratory equipment, as explained in Sect. 5.4(e) of the Self-Evaluation Report. Dissemination of scientific

results is fostered through the organisation of conferences and co-publication of the scientific journal Engineering Review.

Recommendations for improvement

There should be some planning of activities or organisational changes that aim to achieve the targets in the HEI's research strategy and to address the weaknesses and threats in the SWOT analysis. The plan should be recorded and annually updated according to reported progress against the plan, but the discussion of what should be in the plan and consideration of what is working or not working is much more important than keeping a written record.

Plans for investment of financial reserves could include investment in human resource, for instance to lighten the workload of teaching assistants or to help with grant applications.

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

The HEI's equipment for scientific research and professional activity is used in teaching at all study levels, making it available for lab exercises and student projects. This is explained in Sect. 5.5(a) of the Self-Evaluation Report and was confirmed during the expert panel's visits to the HEI's facilities.

Undergraduate, graduate and postgraduate students are involved in the scientific and professional projects of the HEI, as detailed in Sect. 5.5(b) of the Self-Evaluation Report and the evidence referred to there. This leads to students being co-authors of scientific publications, with an increase in the number and quality of such publications over the past 5 years, as shown by Fig. 5.4 there.

Doctoral theses, teaching at graduate level, and – to a lesser extent – teaching at undergraduate level, reflect the scientific research and professional activities and achievements of the HEI, according to Sect. 5.5(c) of the Self-Evaluation Report. Courses at graduate level include findings from lecturers' scientific research, and doctoral theses are typically on topics that are in line with their current scientific projects.

Recommendations for improvement

Improving the infrastructure and increasing the number of funded research projects would lead to increased opportunities to improve the teaching process, especially at the doctoral level.

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>		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		

<i>Quality grade by standard</i>				
<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	

<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.			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	

<i>Quality grade by standard</i>				
<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	

Reakreditacija Tehničkog fakulteta Sveučilišta u Rijeci/Re- accreditation of the Faculty of Engineering University of Rijeka

PROTOKOL POSJETA/VISIT PROTOCOL

**Ponedjeljak, 14. svibnja 2018./
Monday, 14th May 2018**

Agencija za znanost i visoko obrazovanje

Agency for Science and Higher Education

Adresa / Address: Donje Svetice 38/5, Zagreb

13:00 – 13:30 ručak / *light Lunch*

13:30 – 18:00 Priprema za posjet po samoanalizi i standardima, diskusija / *Preparation for the
site visit based on Self-evaluation document and standards for assessment, discussion*

18:00 – 20:00 Polazak za Rijeku organiziranim prijevozom s kratkom pauza, smještaj u Hotelu
Bonavia, Dolac 4, Rijeka / *Departure for Rijeka with organize transportation and short break,
accommodation in hotel Bonavia, Dolac 4, Rijeka*

Utorak, 15. svibnja 2018./
Tuesday, 15th May 2018

Tehnički fakultet Sveučilišta u Rijeci/ Faculty of Engineering University of Rijeka
Adresa/Address: Vukovarska 58, Rijeka

09:00 - 10:00 Sastanak s dekanom, prodekanima i tajnikom (bez prezentacija) / *Meeting with the dean, vice deans and secretary (no presentations)*

10:00 - 11:00 Sastanak članova Stručnog povjerenstva (**Analiza dokumenata**) / *Internal meeting of the panel members (Document analysis)*

11:00 - 12:00 Sastanak s radnom grupom koja je priredila Samoanalizu (voditelji tema unutar samoanalize, članovi Odbora za kvalitetu i ECTS koordinator) / *Meeting with the working group that compiled the Self-Evaluation (leaders of the working groups, Quality Assurance Committee and ECTS coordinator)*

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

13:00 - 14:15 Radni ručak Stručnog povjerenstva / *Working lunch*

14:15 - 15:00 Sastanak s Alumnima / *Meeting with the Alumni*

15:00 - 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 it is needed*

Hotel Bonavia
Adresa/Address: Dolac 4, Rijeka

17:30 - 20:00 Sastanak Stručnog povjerenstva – refleksija o viđenom i priprema za idući dan posjeta, pisanje nacrtu završnog izvješća / *Joint meeting of the expert panel members – reflection on the day and preparation for the next day of the site visit, drafting the final report*

Srijeda, 16. svibnja 2018./
Wednesday, 16th May 2018

Tehnički fakultet Sveučilišta u Rijeci/ Faculty of Engineering University of Rijeka
Adresa/Address: Vukovarska 58, Rijeka

09:00 - 10:30 Sastanak članova Stručnog povjerenstva (**Analiza dokumenata**) / *Internal meeting of the panel members (Document analysis)*

10:30 - 11:15 Sastanak s prodekanom za nastavu / *Meeting with the vice dean for academic affairs*

11:15 - 12:00 Sastanak s voditeljima studijskih programa / *Meeting with heads of study programmes*

12:00 - 13:00 Sastanak s nastavnicima (u stalnom radnom odnosu, nisu na rukovodećim mjestima) / *Meeting with full-time employed teachers (open meeting)*

13:00 - 14:15 Radni ručak članova Stručnog povjerenstva/*Working lunch*

14:15 - 15:45 Obilazak Fakulteta (knjižnica, uredi studentskih službi, ured međunarodne suradnje, informatička služba, učionice), prisustvovanje nastavi, itd. / *Tour of the Faculty (library, student services, international office, IT services, classrooms), participate in teaching, ect.*

15:45 - 16:45 Organizacija dodatnog sastanka o mogućim otvorenim pitanjima prema potrebi / *Organisation of additional meeting on potential open questions if it is needed*

Hotel Bonavia
Adresa/Address: Dolac 4, Rijeka

17:30 - 20:00 Sastanak Stručnog povjerenstva – refleksija o viđenom i priprema za idući dan posjeta, pisanje nacрта završnog izvješća / *Joint meeting of the expert panel members – reflection on the day and preparation for the next day of the site visit, drafting the final report*

Četvrtak, 17. svibnja 2018./
Thursday, 17th May 2018

Tehnički fakultet Sveučilišta u Rijeci/ Faculty of Engineering University of Rijeka
Adresa/Address: Vukovarska 58, Rijeka

09:00 - 10:00 Sastanak članova Stručnog povjerenstva (***Analiza dokumenata***) / *Internal meeting of the panel members (Document analysis)*

10:00 - 10:45 Sastanak s prodekanom za znanost / *Meeting with the vice dean for research activities*

10:45 - 11:30 Sastanak s voditeljima znanstvenih projekata / *Meeting with the heads of research projects*

11:30 - 12:15 Sastanak s asistentima / *Meeting with teaching assistants*

12:15 - 13:30 Radni ručak članova Stručnog povjerenstva / *Working lunch*

13:30 - 14:15 Organizacija dodatnog sastanka o mogućim otvorenim pitanjima prema potrebi / *Organisation of additional meeting on potential open questions if it is needed*

14:15 - 15:15 Sastanak članova Stručnog povjerenstva / *Internal meeting of the panel members*

15:15 - 15:35 Završni sastanak s dekanom, prodekanima i tajnikom / *Exit meeting with the dean, vice deans and secretary*

Hotel Bonavia
Adresa/Address: Dolac 4, Rijeka

17:30 - 20:00 Sastanak Stručnog povjerenstva - Izrada nacрта završnog izvješća i rad na dokumentu Standardi za vrednovanje kvalitete / *Joint meeting of the expert panel members - Drafting the final report and working on the document Standards for the evaluation of quality*

Petak, 18. svibnja 2018./
Friday, 18th May 2018

Hotel Bonavia
Adresa/Address: Dolac 4, Rijeka

9:00 - 11:00 Sastanak Stručnog povjerenstva - Izrada nacrt završnog izvješća i rad na dokumentu Standardi za vrednovanje kvalitete / *Joint meeting of the expert panel members - Drafting the final report and working on the document Standards for the evaluation of quality*

11:30 Polazak za Zagreb organiziranim prijevozom s kratkom pauza za ručak / *Departure for Zagreb with organize transport with short lunch break*

SUMMARY

The International Expert Panel visited the Faculty of Engineering, University of Rijeka (HEI) between 14 and 18 May 2018 with an aim of assessing the institution in accordance with the Accreditation Council criteria.

The panel studied the self-evaluation report submitted by the HEI, examined the data and evidence available in the form of hard copy of sample exam papers, theses, student data, procedures, topic syllabi and learning outcomes etc., interviewed the HEI management board, heads of departments, programme leaders, teachers, research assistants and students. The Panel also visited a number of laboratories, teaching classes and the library.

The summary of the assessment outcomes in each group of criteria is provided below.

	CRITERIA	Outcome
CRITERIA I	Internal quality assurance and the social role of the higher education institution	Minimum Level of Quality
CRITERIA II	Study programmes	Satisfactory Level of Quality
CRITERIA III	Teaching process and student support	Satisfactory Level of Quality
CRITERIA IV	Teaching and institutional capacities	Satisfactory Level of Quality
CRITERIA V	Scientific/artistic activity	Satisfactory Level of Quality

The Expert Panel provided analysis and recommendations under each criterion which should be studied and taken into account by Faculty of Engineering in order to enhance its qualities further while establishing comprehensive strategies to fulfil its potential. Some of the key observations and recommendations are summarised below.

The international expert panel is impressed with the quality of teachers and their dedication to student education. Student support particularly for vulnerable and underrepresented group is impressive. System and resources are in place to effectively deal with any unethical behaviour. The location of the Faculty is ideal for regional economy and Naval Architecture in particular and most graduates are meeting society needs and find employment.

The Faculty of Engineering does not have a structured interaction with alumni and industrial stakeholders. It is recommended that an industry advice panel is established without further delay. Teachers are generally overloaded with teaching and this reflects on research productivity and international rankings. In general there is no strategy document developed by the Faculty, except in research where the Faculty indicates that

they follow the university strategy. However, the Faculty particularly lacks a vision and strategy for internationalisation.

It is recommended that the Faculty develops an internationalisation strategy as soon as possible while detailing its own faculty specific education and teaching strategy.