



agency for science and higher education

**REPORT  
OF THE EXPERT PANEL  
ON THE  
RE-ACCREDITATION OF**

**THE FACULTY OF MECHANICAL ENGINEERING IN SLAVONSKI  
BROD, JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK**

**Date of site visit: 15–16 May 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 the Faculty of Mechanical Engineering in Slavonski Brod, Josip Juraj Strossmayer University of Osijek.

Members of the Expert Panel:

- Prof. Ben Hicks, Department of Mechanical Engineering, University of Bristol, United Kingdom of Great Britain and Northern Ireland, Panel chair,
- Prof. Stephen Beck, Faculty of Engineering, University of Sheffield, United Kingdom of Great Britain and Northern Ireland,
- Prof. Damir Markučić, Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb, Republic of Croatia,
- Prof. Robert Basan, Faculty of Engineering, University of Rijeka, Republic of Croatia,
- Denis Plavljančić, Faculty of Electrical Engineering, Mechanical Engineering and Naval Arch., University of Split, Republic of Croatia, student.

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

- Management,
- Self-evaluation report committee,
- Students,
- Alumni,
- Heads of study programmes,
- Full-time teaching staff,
- Teaching assistants,
- Meeting with the heads of research projects,
- Representatives of the business sector and 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 the Faculty of Mechanical Engineering in Slavonski Brod, Josip Juraj Strossmayer University of Osijek, on the basis of the self-evaluation report of the Faculty of Mechanical Engineering in Slavonski Brod, Josip Juraj Strossmayer University of Osijek, other relevant documents and the 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 Mechanical Engineering in Slavonski Brod, Josip Juraj Strossmayer University of Osijek and writing of the Report, the Expert Panel was supported by:

- Viktorija Juriša, coordinator, ASHE,
- Tirena Leinert Novosel, assistant coordinator, ASHE,
- Marija Omazić, interpreter at the site visit, ASHE,
- Ivana Rončević, 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:

Mechanical Engineering Faculty in Slavonski Brod, Josip Juraj Strossmayer University of Osijek

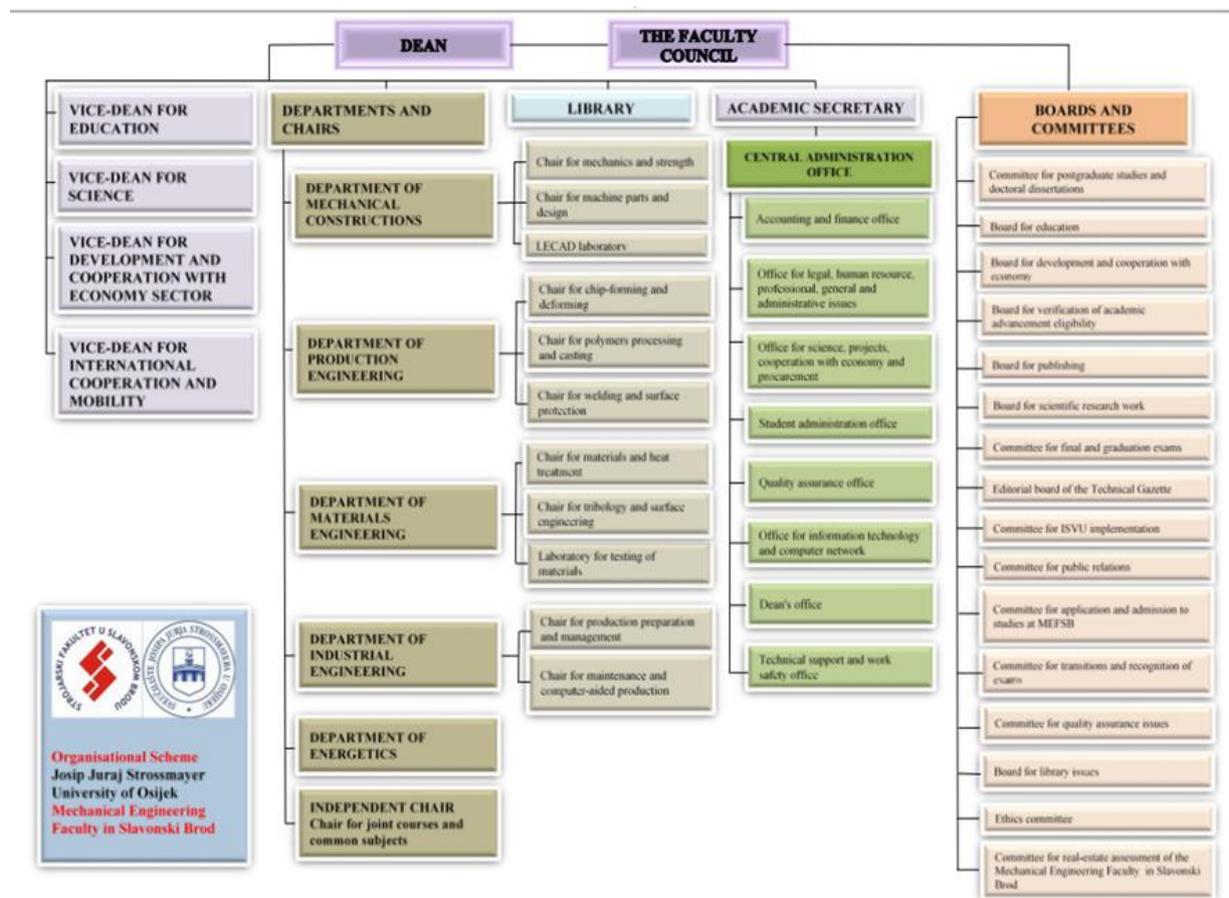
ADDRESS:

Trg Ivane Brlić Mažuranić 2, Slavonski Brod

DEAN:

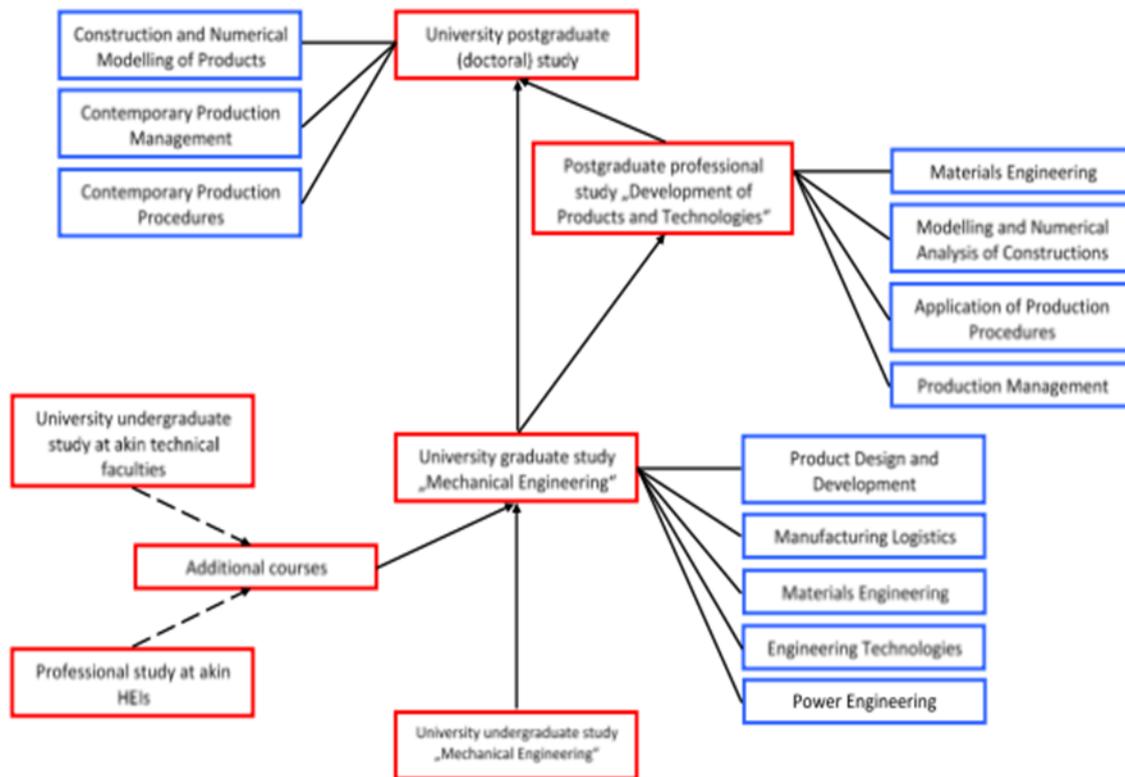
Prof. dr. sc. Ivan Samardžić

ORGANISATIONAL STRUCTURE:



Source: Self-Evaluation Report 2018, pg. 7, Mechanical Engineering Faculty in Slavonski Brod

## STUDY PROGRAMMES:



Source: Self-Evaluation Report 2018, pg. 22, Mechanical Engineering Faculty in Slavonski Brod

## NUMBER OF STUDENTS:

Full-time students: 482

Part-time students: 538

## NUMBER OF TEACHERS:

Full-time employed: 46

Associates: 46

## SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

The beginnings of higher education in the field of technical sciences in Eastern Croatia date back to 1962, when the Technical College in Zagreb established the Centre for Part-time Study in Engineering in Slavonski Brod, in a city with well-known factory Đuro Đaković, established in 1921. The Centre for Part-time Study in Engineering was active for 17 years, being supported by today's Faculty of Mechanical Engineering and Naval Architecture of the University of Zagreb. In 1979, there are conditions achieved for establishment of the Mechanical Engineering Faculty in Slavonski Brod, as an independent legal entity within Josip Juraj Strossmayer University of Osijek.

The chronological overview of events important in the Faculty development is presented below: 1962 the Centre for Part-time Study in Engineering in Slavonski Brod was established with support of former Technical College in Zagreb.

1967 the Centre continued its activities within the Faculty of Mechanical Engineering and Naval Architecture in Zagreb.

1975 the University of Osijek was established; the Centre for Engineering Study in Slavonski Brod was one of the University founders.

1979 as a result of a referendum, the Organisational unit Research and Development – Mechanical Engineering Faculty, which operated under the Đuro Đaković Institute of Mechanical Engineering, joined the University of Osijek.

1981 the first agreement on cooperation was signed between the University of Osijek and Hochschule Bremen upon the initiative of the Mechanical Engineering Faculty.

1983 upon reorganisation of the Đuro Đaković Institute of Mechanical Engineering, there was the Institute of Mechanical Engineering – Mechanical Engineering Faculty established, within which the Faculty started its scientific research activities and teaching at the former VI/1 level (professional studies).

1985 the Institute of Mechanical Engineering – Mechanical Engineering Faculty fulfilled criteria for registration as a higher education institution in the field of Technical Sciences – Mechanical Engineering.

1986 the Faculty became eligible to carry out university study for the degree of graduated engineer in the field of Mechanical Engineering (within former system of higher education).

1991 Mechanical Engineering Faculty in Slavonski Brod acts as an independent institution within Josip Juraj Strossmayer University of Osijek.

1992 the Faculty operated in difficult war circumstances, carrying out study programmes in Pleternica and Požega because of the war attacks on the city of Slavonski Brod.

1994 in cooperation with the Faculty of Civil Engineering and the Faculty of Electrical Engineering, the Faculty started with publication of the journal Technical Gazette, which is indexed in the SCI Expanded Database.

1995 teaching programme is organised for employees of the Croatian Ministry of Defence (8 generations were enrolled).

1998 the Faculty obtained a license to carry out university postgraduate study programme within Technical Sciences-Mechanical Engineering, with orientations in Production Systems and Production Technologies.

2000 the first Master of Technical Sciences was promoted.

2002 the first four doctoral dissertations were defended, the mentors of which were professors of the Mechanical Engineering Faculty in Slavonski Brod.

2005 reform of study programmes according to Bologna principles, university undergraduate and graduate studies organised in cycles of 3.5 + 1.5, with four orientation programmes.

2006 obtained licence from the Ministry of Science, Education and Sports to carry out Postgraduate doctoral study with three orientation modules.

2007 obtained licence from the Ministry of Science, Education and Sports to carry out Postgraduate professional study with four orientation modules.

2007 obtained funds from the Ministry of Science, Education and Sports for 2 scientific research programmes and 11 projects.

2007 the event the Mechanical Challenge was organised for the first time, to be held annually.

2009 the Faculty Annual Report was published in English language.

2009 the Faculty became involved as a partner in three CEEPUS projects, and intensified its international cooperation.

2009 the first ERASMUS outgoing mobilities were realised by the Faculty staff.

2010 obtained licence from the Ministry of Science, Education and Sports to carry out university undergraduate and graduate study in Mechanical Engineering according to 3+2 scheme with four orientation programmes.

2011 the Faculty Alumni Club has been established.

2011 the procedure for licence award has been initiated to carry out new university graduate study in Power Engineering.

2011 preparation of a project for the new Centre for Knowledge and Technology Transfer

2013 New orientation in Power plants within university graduate study of Mechanical Engineering started in the academic year 2013/2014.

2013 the Quality Assurance Office has been established as a unit of the Central Administration Office of the Mechanical Engineering Faculty in Slavonski Brod.

2013-2014 the Faculty was carrying out 4 EU projects, which total value was more than 10 million HRK: „Every Learning Counts! + Svako učenje se računa!“, „e4 corner@mefsb: entrepreneurship in engineering education initiative – key to better employability“, „ME4CatalOgue (Mechanical Engineering for Catalogue) – Croatian Catalogue of knowledge, skills and competences for Mechanical Engineering studies (Bachelor, Master and Doctoral study programmes) based on learning outcomes, and „Flexible manufacturing of customized spinal orthoses – OrtoFLEX“. More details about the projects is available further in this Self-evaluation report.

2016 implementation of „e-student book“: on the Faculty Council session held on 31 March 2016, the decision has been reached to adopt new way of recording student performance at exams. Since April 2016, monitoring and evaluating students in undergraduate and graduate studies is performed only within the Information System of Higher Education Institutions - ISVU (in the module Exams).

2017 successful completion of the re-accreditation of the postgraduate university doctoral study programme in Mechanical Engineering.

2017 purchase of the real-estate at the address Mile Budaka 1 in Slavonski Brod for the purpose of teaching organisation, funded from the Faculty own resources.

Being one of the University of Osijek's constituents, the Faculty operates by its clear vision of development. During the Homeland War, the Faculty faced difficulties in organising the classes, but today the Faculty is systematically performing its main activities: education of students, scientific research and international cooperation, as well as cooperation with the economy sector, all with the aim to fulfil its social role in the community in which it operates.

(source: Self-Evaluation Report 2018, pg. 5, Mechanical Engineering Faculty in Slavonski Brod)

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

## **ADVANTAGES OF THE INSTITUTION**

1. Extensive links with local industry with potential to contribute more actively to programmes and research.
2. Strong engineering science content in the degree programmes.
3. A committed, hard working and enthusiastic staff with a broad range of knowledge and skills.
4. A growing alumni society with potential to promote and enhance the Faculty regionally, nationally and internationally.
5. Extensive use of online learning resources to support students at all levels.
6. A significant number of young staff with great potential.
7. Extensive implementation of monitoring and quality assurance documentation providing a platform for quality improvement in the future.
8. A significant increase in international mobility since 2012 complemented with a strategy to increase international reputation and collaboration.
9. A notable increase of papers published in high-rank international journals both in number and in relation to the total number of publications.

## **DISADVANTAGES OF THE INSTITUTION**

1. Insufficient opportunities for laboratory and practical experience.
2. Distributed site and facilities making collaboration and integration of classroom and laboratory work challenging.
3. Limited facilities for student study, including practical space, equipment, library and resources.
4. Lack of internal scrutiny and review of assessments, particularly, exam papers.
5. Limited entrepreneurial, management and design content in undergraduate programme.
6. Lack of formal forum for staff-student liaison.
7. Number of publications in domestic sources still too large in comparison to international ones.
8. Lack of student-led societies and clubs related to engineering.

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

### **EXAMPLES OF GOOD PRACTICE**

1. The support and provision for part time study enabling mature and low income students access.
2. The programmes provide graduates with strong core skills for local industries.
3. The use of an Learning Management System shared with other Croatian universities.
4. The creation of a Council for Collaboration with a Đuro Đaković subsidiary. This model could be extended to other strategic relationships.
5. The implementation of four vice-deans providing significant leadership capacity.
6. Focused calls for equipment and facilities to support laboratories and early career researchers.
7. Extensive use of teaching assistants to provide support for laboratory and problem classes.
8. Systematic processes for encouraging publications and high quality research e.g. prizes.

## ***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 Quality Assurance (QA) system is satisfactorily described by the QA Manual. While components of the QA are briefly described in the Manual they are implemented in full and according to accepted / good practice. Correspondingly, the written procedures for particular Quality Assurance activities require more complete definition. Undertaking this may also aid in establishing approaches for more in depth analysis to support quality improvement.

Evaluations and analyses are performed according to the goals and activities set by the Strategy and annual Action plans. These documents are publicly available on the Faculty web page.

Regarding internal Quality Assurance and the social role of the Faculty, a number of improvements have been introduced and achieved following the recommendations from the previous external evaluation.

As the Faculty is strongly focused on the local economy they have very close collaborations interacting with them on an almost daily basis. This is also the case for internal stakeholders, students and non-teaching staff, since they are not a large faculty (a relatively small number of students and staff). Nevertheless, the Panel would encourage more active participation of the all stakeholders in the relevant committees.

#### **Recommendations for improvement**

**The QA system needs to be used for Quality Improvement and the committees need to include all relevant stakeholders to support proactive planning and monitoring of improvements.**

#### **Quality grade**

High level of quality

### **II. Study programmes**

#### **Analysis**

According to the senior staff, courses are designed to enhance students' creativity, for example in terms of the design process. This may be true of masters courses, but not seen on many other studies.

There are currently about 1000 students. The University is trying to increase quality, rather than numbers. This should decrease the dropout rate. The senior management is planning on increasing student numbers by introducing new courses. However, these do not appear to be having the required effect at present.

Students do some practical activities. These are mostly materials and take the form of demonstrations. This provides a skills deficit for the students. Generally students on an engineering programme should learn practical experimental and manufacturing skills. The current course does not allow them much scope to do this.

The courses have a link to the real world. Problems and examples come from the workplace. Case studies can be made in conjunction with industry.

The laboratories that we saw were equipped with reasonable materials testing experiments. When we questioned the students, they confirmed that most of the labs were materials there were no labs on kinematics or fluid mechanics. When we spoke to the students, it was confirmed that there were only materials laboratories. Furthermore, they do not really “do” the labs, only receive demonstrations.

When we asked the students about their appreciation of the design process, only students who did the masters course actually learned the design process. Other, earlier courses were much closer to the design of machine elements. This is important, but only a portion of design.

Some of the alumni were keen on the students learning more about finance, management and enterprise. The other thing that is becoming clear is that the specialised courses are able to deliver high quality graduates in their own fields. However, those who do not do these may not have what are probably core skills.

The employers thought that the students that worked in their firms had a good skill set and were able to be inventive. When probed, they believed that the mathematics and physical sciences that underpin the courses are an important part of the education of their students. There was a view that these could be more effective if they were better put into context.

### Recommendations for improvement

- **Student opinion and input should be sought more effectively and frequently.**
- **Assessments could have better oversight and scrutiny.**
- **Courses on management, finance and the design process should be introduced to all students.**
- **The practical element of the programmes should be increased.**

### Quality grade

Satisfactory level of quality

### III. Teaching process and student support

#### Analysis

HEI publishes all admission criteria and they are well defined and can be found on the official website. Admission criteria ensure the selection of candidates with appropriate prior knowledge. In addition, the Faculty organises revision courses in physics and mathematics. On the Faculty level there are defined procedures for recognizing previous learning.

HEI regularly gathers and analyses information on student progress. The completion rates have increased from 43% in 2010 to 60% in 2016. Although there is an increase in completion rates, the Panel board is of the opinion that there is no systematic approach to this topic.

The staff gave examples of various teaching methods and also examples of how they are aligned with the intended learning outcomes. The staff confirmed that they have autonomy in how they deliver and assess courses. Teaching methods are adapted to a diverse population and efforts are made to adapt lecture material for international students. Technologies are, when compared to other Universities in the country, on a satisfactory level. Students rated their teachers as committed and available and are generally really satisfied with the teaching staff.

There is a careers guidance centre on the level of the University and it is situated in Osijek. There is no careers guidance centre in Slavonski Brod. Once a year the Faculty organises a careers day to introduce students to potential careers.

HEI did not provide the Panel with examples of support to student associations and organisations.

Students do not use the library as it is really small. HEI does provide almost all learning materials online.

Teaching and assessment of knowledge and skills are adjusted to students from under-represented and vulnerable groups. HEI also shows good practice in helping students with studying disabilities.

Students are well informed about the opportunities for completing part of their study abroad. HEI is involved with Erasmus and CEEPUS programmes.

Students feel that the lecturers are capable of teaching in English. The Faculty prepares students mostly for employment in the local industry. The Panel is of the opinion that students also gain competencies required for employment on an international level.

HEI provides good support to foreign students in enrolment and during their stay in Slavonski Brod.

Criteria and methods for evaluation and grading are clear and published before the beginning of a course.

HEI provides support to the assessors in the development of skills related to testing and assessment methods.

There is no system and no specific procedures for ensuring objectivity and reliability of grading. It is decided solely by the teachers.

The HEI does not have an established database of contacts with alumni and employers, but there is enough evidence and feedback from the alumni and employers that prove that there is a strong cooperation.

Alumni and employers are generally well satisfied with the level of involvement and cooperation.

### Recommendations for improvement

- **Greater use of the contextual student feedback would make it easier to improve courses;**
- **More communication and activity both from HEI and the students regarding student associations and organisations;**
- **It is suggested that the Faculty reflect on the design of the survey to improve its utility to inform and improve teaching;**
- **More systematic approach to ensuring objectivity;**
- **More effort in presenting career choices, that are not from the local economy, to students.**

### Quality grade

Satisfactory level of quality

## IV. Teaching and institutional capacities

The total number of employees is 82, with 30 being scientific-teaching staff providing eighty percent of norm teaching hours. The current staff-student ratio is 1:24 and it is consistent with similar institutions. Data on workload is provided and the distribution across staff is reasonably equitable. Recruiting and retaining new teachers is a challenge because of the cap on recruitment and the pay gap with industry. The Faculty mitigates this by replacing retired professors with new, more junior, appointments and by also retaining the services of the retired professors as teaching assistants. The Faculty requires all staff to complete psychological-pedagogical and didactic-methodological training and the University provides some training courses. The Faculty is involved in a number of international mobility programmes including ERASMUS. Whilst the teaching staff are encouraged to collaborate and undertake longer visits to other institutions, the teaching commitments make it difficult to organise. All doctoral researchers are required to undertake a period of three months at another institution prior to the completion of their studies. This practice is commendable. Additionally, many of the staff work closely with industry and a number work in their own companies, supporting staff development and the local industry. The Faculty is also

progressing with plans for the creation of a dedicated centre for knowledge exchange and technology transfer.

The Faculty is spread over four buildings and three sites covering around 4,500 sq.m. Although limited, the space is used effectively by the Faculty and does not inhibit their strategy.

There does not appear to be a very good practical side to the programme and it would be a major improvement if a more comprehensive experimental scheme were available to students. The library is considered to be too small and lacking in workspace for students, with a limited range of textbooks. In terms of learning support material the Faculty and all staff make lectures and support material available on CARNet lms - loomen which is an example of good practice and thought leadership in this area.

Overall management of finances appears to be consistent with HE practice, with the Dean having overall responsibility for Profit and Loss. The Faculty operate a number of annual calls for proposals for investments in equipment and projects, some of which are reserved for younger staff, doctoral students and teaching associates.

### Recommendations for improvement

- **The Panel proposes to the Faculty to analyse the bottlenecks in teaching and seek to improve efficiency through the adoption of greater teamwork, efficient teaching and assessment methods, and ICT.**
- **The Panel proposes to the Faculty to consider implementation of annual staff reviews.**
- **Improved mentoring and additional training courses on, for example, bid writing, paper writing, innovations in learning and teaching should be provided by the University.**
- **The Faculty should consider implementing more experimental and practical activities into their programmes.**
- **Both library facilities and student study space needs to be improved in terms of resource and functionality.**
- **The Faculty may need to develop a longer-term investment plan that concentrates annual investment in particular areas so as to achieve a critical mass.**

### Quality grade

Satisfactory level of quality

## V. Scientific/artistic activity

### Analysis

Significant awareness of the importance of producing high quality and quantity of scientific research and consequently of related high quality publications is present at the Faculty. In the past period a number of papers were published in relevant high-quality journals by faculty members, which is in line with recommendations of previous accreditation. There is slower-than-desired improvement related to difficulties in winning new research projects and grants. Faculty members feel they are well supported in research and publication efforts but see their teaching work overload as significant obstacle in achieving better results and productivity. The Faculty encourages publication by awarding the author(s) of the greatest number of scientific publications potentially favoring senior researchers with larger network and also fostering publication in lower-quality journals and conference papers. Discussions with teachers, researchers and teaching assistants confirmed that they see these measures as relevant, valuable and effective. The University and the Faculty fund projects of young researchers and doctoral students to help them realize their research ideas. Due to insufficient funds, this valuable initiative has been temporarily suspended. Results of research activities are actively promoted by the participation of the Faculty at international conferences. A number of these publications depend heavily on available funding which is another argument for increased efforts in obtaining new projects and related funding. There is very intensive exchange on requirements and plans with different external stakeholders (industry and local/regional community) which is reflected in the significant number of joint expert and industrial projects, as well as other ways of cooperation and mutual support which is already identified as one of the Institution's strong points. The Faculty and its members and employees take their role in local and regional society in its further development very seriously. Large numbers of the faculty are members of public and professional societies and local government bodies and boards in local and regional companies. This is still largely a result of activities and contacts of faculty members on individual basis. The Faculty also organizes and actively participates in a number of events directed at increasing the engagement of different groups of the community and raising awareness of their field of activity.

The Faculty fosters intensive contacts and collaborations with regional and international scientific/research and higher education institutions, which is evident from a significant number of agreements and CEEPUS/Erasmus projects. Teachers, especially young researchers and assistants, benefit from this through numerous study stays at other institutions.

The Faculty possesses appropriate documents that define plans and activities on a strategic level, they are well aligned and performance/fulfilment of individual tasks are monitored regularly. Strategy for the time period from 2019 and beyond is currently being prepared and is due for publication in December 2018. The resources needed for scientific and research activities are of limited nature but do not bring into question the achievement of the goals and tasks stated in the Strategy. There are challenges in the availability of appropriate buildings/space and equipment which need to be overcome. Efforts, measures and preparations which are underway (current and new project applications, plans to create a new Centre for Knowledge and Technology Transfer, the new site and building acquired at the Duro Dakovic premises and plans for its refurbishment) show that there is clear and strong vision

and intent to improve in this regard and this needs to be continued. The Faculty has provided a Financial plan in which income and expenses for the upcoming period exist and it indicates sufficient sustainability. Report of the fulfillment of Financial plans would need to be made available as well. The Faculty provides very good opportunities and actively supports mobility and research result dissemination through a number of measures. Systematic measures and financial support have been introduced enabling the Faculty members to apply for the financing of small scale projects and the purchase of needed equipment throughout the year. The Faculty has measures in place for recognizing and awarding excellence of its researchers for their achievements in scientific publications, cooperation with the industry and scientific/expert projects. The available equipment acquired through different means is made available to students of all levels of study. Certain equipment is used less, and with excessive emphasis on demonstration as opposed to practical use, especially the newer ones which needs to be improved. Undergraduate and graduate students are actively encouraged to get involved in research projects but not enough and not systematically which needs to be improved. The number of papers published in co-authorship with students seems to be good but considering the new study programme, it is expected to increase in the coming period. The resources needed for the current scientific and research activities can be seen as somewhat limited but do not bring into question achievement of the goals and tasks stated in the Strategy, especially taking into account new project application and search for alternative sources of financing (collaboration with the industry) which the Faculty is actively pursuing.

### Recommendations for improvement

- **Awarding authors of individual papers published in outstanding scientific journals (Q1 and Excellence category). Increase impact and visibility of the research by publishing in prominent and excellent journals, even if this initially leads to delay and rejection.**
- **Continue with the effort to decrease the teaching overload of teachers and assistants in order to increase their capacity to work on research, projects and publications.**
- **Establish systematic support for project application and project pipeline management in order to better plan and monitor this income stream and way of development.**
- **Increase practical (hands-on) usage of equipment in teaching process.**
- **Develop more systematic, faculty-wide measures for informing students about possibilities of involvement in research and industrial/expert projects. Increase the number of students involved in scientific/expert projects and consequently, number of joint publications.**

### 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 Committee for Quality Assurance was appointed in September 2011. In the middle of 2013, the Faculty established the Quality Assurance Office, that has taken over the operational activities related to the quality assurance system, all performed in cooperation with the Committee for Quality Assurance. According to the SER, the Committee consists of three representatives of Faculty professors, Head of the Quality Assurance Office (employed since 2013), one student representative, three representatives of employers and one member representing the Faculty Alumni Society. The strong orientation to the local economy, as a result of the Faculty's modus operandi, resulted with the provision for three appointments of the representatives from the local industry. It would be more preferable to reconsider the structure of the Committee for Quality Assurance with formal inclusion of other internal and external stakeholders (e.g. non-teaching staff, local community, professional organizations, etc.). While the existing nine members of the Committee represent non-teaching staff and the community, representation from the Alumni Club is necessary for conformance.

The Faculty possesses appropriate documents that define plans and activities on a strategic level - Strategic research agenda (2014-2018) and the Faculty Strategy (2015-2019) containing required elements.

Quality Assurance content is publicly available at: <http://www.sfsb.unios.hr/fakultet/kvaliteta> where QA documents, analysis and reports are published. The QA System is described within the Faculties' Manual (published in Feb 2017. rev. 3), Policy, Strategy while they follow the [University Ordinance](#). Described QA activities and mechanisms could be more utilized for improved planning and managing of the core processes.

SWOT analysis was published in December 2015, and the Policy was revised in March 2017.

Regarding Quality Assurance, evaluations and analyses are performed within the following four scopes:

- Research;
- Cooperation with industry;
- Teaching;
- Mobility.

These areas correspond to the portfolios of the four vice-deans. Teaching staff (from each Department) and administrative staff provide data for evaluation. Analysis is run by the

Management Board (Dean, vice-deans and Head of QA Office) according to the goals and objectives determined by the Strategy and Action plans on an annual basis. As a result of the analysis the Annual report is issued. Some evaluations are performed quarterly.

The Faculty elicit feedback from the local community and local industry which is also taken into account for further planning and developments.

### Recommendations for improvement

**Ensure that there is an independent Quality Assured internal moderation and checking system for assessments before they go out. The Panel recommends that the Faculty review the structures of:**

- **The Committee for Quality Assurance also including other internal and external stakeholders and,**
- **The Committee for study programmes (no employers, no students).**

**In addition to reviewing the structure, a more direct and active participation of the representatives in the Committees is encouraged with a particular focus on quality improvement rather than just measurement.**

### Quality grade

Satisfactory level of quality

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

### Analysis

Regarding internal quality assurance and social role of the Faculty, a number of improvements have been introduced and achieved following the recommendations from the previous external evaluation.

Internal yearly evaluations are the basis for the planning for the following year. Likewise, the Strategy has been revised.

Analysis of the student surveys, internal audits, and realizations of the action plans and strategy are published at "[Analize i izvješća sustava kvalitete](#)". The document "Realisation of the Action plan" has mainly quantitative evaluation of the accomplishments (indicators) while the qualitative evaluation should be more useful for the potential future improvements and therefore used.

### Recommendations for improvement

**Alongside the qualitative assessment of the indicator accomplishments, a qualitative evaluation should also be considered and introduced.**

### Quality grade

High level of quality

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

#### **Analysis**

On April 2011, the University of Osijek adopted the Code of Ethics which is applicable to the Faculty. The Faculty Council has appointed the Ethics Committee on February 2015. The Ethics Committee is made of two members representing staff in scientific-teaching positions, one member representing assistants, one student, and one member as a representative of other employees. Over the past period, there was one case of the Code of Ethics violation that was processed in the fair manner.

Additional initiatives on these topics include:

- A quality policy being published.
- There is student ombudsperson at the Faculty.
- There is active detection of plagiarism, as well as procedures for detecting academic cheating and the forging of results. This is often conducted using plagiarism detection tools (software).

#### **Recommendations for improvement**

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

#### **Quality grade**

High 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**

Information about the Faculty activities are provided in various media presentations. General information about the Faculty is available on the website where also specific information about the research activities, admissions to study programmes, teaching processes, news on current events at the Faculty and relations to the economy and community can be found.

General information about the Faculty as well as the overall study programmes is also available in English. Where possible and given staff constraints lectures of the courses are delivered in English also.

Students' comments indicated that the web site design is out-of-date. This leaves a poor impression on the students, as they want to be part of a modern university. Its structure should be improved/optimized in order to find relevant information more logically and efficiently.

It was emphasized on different occasions that the “*Strojarski izazov*” (Engineering Challenge) is the main and most important yearly event where all internal and external stakeholders (high schools, community, industry, employers, alumni) are gathered exchanging information and feedback, as well as announcing the Faculty's achievements. Of note is that the Faculty holds regular Open Days and outreach events at local schools.

The Faculty monitors pass rates at the course level as well as an overall drop-out rates. The data is not formally analysed and used for planning and improvement. They are analysed only in small (closed) groups (Dean and vice-deans, president of the Committee, Head of QA Office, head of Student Office), so they are not communicated as performance indicators to various stakeholders.

#### Recommendations for improvement

**To analyse pass rates and drop-out rates more systematically and to introduce specific measures for improving them.**

#### Quality grade

Satisfactory level of quality

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

#### Analysis

Regarding the social role, the Faculty organizes “*Strojarski izazov*” (Open doors day event, since 2007), an event that gathers community and other external stakeholders (local administration, pupils from the schools, partners from industry, alumni, etc.). This allows greater community ownership of the Faculty.

Bearing in mind the development of the local community and economy, there is a close cooperation with local industry and the Chamber of Commerce, as well as with Alumni Society in organising public lectures, invited talks, round tables, conferences, events contributing to the popularisation of science and contemporary technologies, and publications as well.

A Council for cooperation between Đuro Đaković company and the Faculty has been established to improve relation and activities between these two partners.

#### Recommendations for improvement

**Focusing the strategy and activities to a wider region, rather than only to the local industry and community.**

#### Quality grade

High 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 needs of society.**

### Analysis

There is no doubt that the study programmes produce graduates whose skills and experiences are well aligned with the needs of the region.

The basic three year degree provides a good background in Engineering, although it is quite theoretical in approach. The two-year Masters degree prepares the students far better for more inventive roles in industry and beyond. However, the paperwork does not reflect this. It is filled with greater aspirations for the three-year degree which the actual courses do not appear to carry out.

The introduction of the teaching of management, finance and design process (from specification to prototyping) to the three-year programmes would enhance the programmes considerably. The current structure takes a very traditional view of the syllabi. Modern engineering courses tend to address more than just the engineering science and machine element design that these programmes concentrate on.

### Recommendations for improvement

**Make sure that the objectives for the courses are less aspirational, and therefore better aligned with the actual delivery of the programmes, or align the programmes better with the aspirations.**

**Introduce all students to finance, management, entrepreneurship and the design process.**

### 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

There are three levels of learning outcomes: programme, module and course. The Faculty has undertaken an international project (review) to set standards. This is good practice. All courses have between 6-8 learning outcomes. These are set by the learning and teaching committee. The high level ones were last set in 2011. Last year (2017) these were grouped and made consistent to make them clearer.

There is input from staff, externals (industry) and there was a student representative, too. These are regularly updated and students are made aware of what they are.

An examination of the assessments indicate that they are of an appropriate standard on an international scale. This is excellent.

#### Recommendations for improvement

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

#### Quality grade

High 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

There is a webpage where the learning outcomes for each course are published along with where and how they will be achieved. The course leader is responsible for ensuring that the learning outcomes are achieved. They will get input from other assistants and professors in this. Staff confirmed that they have great autonomy in the way that they can achieve the learning outcomes.

It is not clear what process exists for quality assurance on this. There does not appear to be a paper trail for the examination process. Most issues appear to be dealt with *post hoc*. This includes those of standards. The system that is used in the UK at various levels uses people external to the examining of that course to look at assessments prior to them being used. This is normally a teacher at another institution working in a comparable area. Implementing the most local level (formal review and approval) of this would reduce the number of issues raised by students after the marks are distributed.

#### Recommendations for improvement

**There should be a process of looking at the assessments before they go out. This should be recorded and monitored. This should deal with both coverage and standards with respect to the course and 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**

The discussions we have had with these various stakeholders show that the Faculty is taking the views of their stakeholders seriously. They are all able to input to the course leaders on their requirements and their impressions of the programmes. This helps to make them fit for purpose.

We were generally impressed with their enthusiasm and willingness to input to the courses and programmes. They were also able to take students on for projects and placements. They appeared satisfied with the programmes and generally reported that they were asked for input to these.

The students were somewhat less able to change the nature, delivery or learning outcomes of the courses they are studying. The fact that they do not have much of a voice over them should be improved. This would enhance the student experience somewhat. While the SER states that the student body were satisfied with their level of engagement, this is in comparison to what they are used to rather than best practice. The aspirations of the Faculty in seeking their voice should be increased considerably.

### **Recommendations for improvement**

**Staff should meet with students far more often to allow changes to occur in a year. The Panel suggests that the Faculty convene a Staff-Student Liaison Committee (SSLC). The SSLC should comprise representatives from each year group and heads of study. The SSLC should meet monthly to provide continuous input into the improvement of taught programmes and remedying of any issues experienced in a timely manner.**

### **Quality grade**

Satisfactory level of quality

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

### **Analysis**

These appear to be fine.

The students were kept busy, but were not overworked. They seem to be aligned with the standards that one would expect. The Panel note that the ECTS for project/dissertation work were comparably lower than at other institutions.

### **Recommendations for improvement**

**The Panel suggests to the Faculty to reflect on the contribution of project/dissertation work to the programmes and whether it may be appropriate to increase these to 1/6th of the programme for the Masters courses.**

#### Quality grade

Satisfactory level of quality

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

#### Analysis

Engineering is fundamentally a practical course of study. It is therefore important that students actually get to grips hands on with experiments and the building of artefacts. While there are some activities of this type on the programmes, they are not very extensive and many of those are with students in large groups. The Panel were informed by the students that these were mostly on the topic of manufacture and were fundamentally demonstrations. Furthermore, the opportunity for manufacture, construction and testing were not great.

It is understood that the implementation of this type of activity is costly in terms of space, staff time and equipment. However, to graduate modern engineers this is extremely important.

#### Recommendations for improvement

**The Faculty should endeavour to implement more laboratories and manufacturing into the course. The equipment for this can actually be small and cheap, but even this will clearly introduce experimental measurement and methods into the student's learning. More space and staff would, naturally, make this an easier process, but even without this, the effect on student interest and performance should be noticeable.**

#### 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

Part-time students are provided with the same experience as the full-time ones. Their teaching, however, takes place outside core hours and at weekends. This is very good for inclusion and the more mature student. It is appreciated that this adds extra teaching load to staff.

#### Recommendations for improvement

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

#### 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

Admission criteria and criteria for continuation of studies are clearly defined, published and consistently applied. All additional information considering admissions criteria can be found on the Faculty's web page.

HEI supplied the Panel with the table containing the number of students from other HEI's or study programmes. At the site visit the HEI supplied the Panel with examples of recognition of studies and prior learning. The Faculty provided sufficient information regarding this topic in their Self Evaluation Report (SER).

#### Recommendations for improvement

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

#### 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**

HEI regularly gathers and analyses information on student progress. The HEI provided data on pass rates, correlation between the quality of enrolled students and performance, completion and drop-out rates. The completion rates have increased from 43% in 2010 to 60% in 2016.

Although there is a notable increase in completion rates, the Faculty did not present the Panel with examples of measures to increase pass rates. The Panel is of the opinion that there is no systematic approach to this topic. Failure rates for some courses continue to be above 40% (some course have pass rates lower than 40%). The questions in the current student surveys only check whether the stated learning outcomes and the syllabi are covered. The quality of the courses (performance) is not explicitly assessed. Consequently, there is insufficient information to support a continuous improvement process (feedback loop). Perhaps, as a further consequence of this, the continuous improvement (quality control) process is not explicitly managed by the Faculty via a formal process. These two aspects should be addressed by the Faculty.

#### **Recommendations for improvement**

**The greater use of the contextual student feedback would make it easier to improve courses. This will help even on courses which get high grades of feedback.**

#### **Quality grade**

Satisfactory level of quality

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

#### **Analysis**

The staff gave examples of various teaching methods and also examples of how they are aligned with the intended learning outcomes. Also, almost all of required learning material is available online. The HEI showed evidence that it continually evaluates and adapts teaching methods and different modes of programme delivery. The staff confirmed that they have autonomy in how they deliver and assess courses. This has led to some effective, student centred courses. The site visit showed that the local industry has a lot of influence and is involved in making of study programmes. Teaching methods are adapted to a diverse population and efforts are made to adapt lecture material for international students. As an example the Faculty organises special weekend classes for part-time students. The HEI does not have state-of-the-art technologies for modern teaching. Technologies are, when compared to other Universities in the country, on a satisfactory level. Students rated their teachers as committed and available and are generally really satisfied with the teaching staff. The Faculty require students to complete a survey for each course (c.f. page 66 of the Self-Evaluation Report). The results reveal that students find the majority of the courses satisfactory with regard to the areas

covered by the survey. This was corroborated by speaking with the students, and the Panel's opinion is that the students are generally satisfied with the availability of teaching staff and the support they get from the HEI. In terms of assessment methods it was observed that students undertake a range of group activities (projects and seminars) and technical reports. As noted in other sections the number and variety of practical classes is limited and correspondingly the opportunities for group work and coursework are limited.

### Recommendations for improvement

**While a survey is completed by students, the questions in the surveys only address whether the learning outcomes and syllabi were covered and not the quality of the courses. The questions do not inform a cycle of continuous improvement of the teaching methods, teacher performance, didactics and assessment process. Correspondingly, it is suggested that the Faculty reflect on the design of the survey to improve its utility to inform and improve teaching.**

**As stated in other areas, the Faculty should increase the number and breadth (coverage) of laboratory and practical activities.**

### Quality grade

Satisfactory level of quality

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

### Analysis

The HEI provided sufficient evidence regarding information packages for students, student support and counselling services.

Number, qualifications and structure of library and administrative staff was provided on site. There is a careers guidance centre on the level of the University and it is situated in Osijek. There is no careers guidance centre in Slavonski Brod. Once a year the Faculty organises a careers day to introduce students with potential careers.

The HEI did not provide the Panel with examples of support to student associations and organisations.

After speaking with the students, the Panel's opinion is that the students are generally satisfied with the availability of teaching staff and the support they get from the HEI (tutors, supervisors, advisers, etc.). Students do not use the library as it is really small. The HEI does provide almost all learning materials online.

### Recommendations for improvement

**More communication and activity both from HEI and the students regarding student associations and organisations.**

### Quality grade

Minimum level of quality

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

#### **Analysis**

HEI does not adjust admission, application and admission criteria to students from all under-represented and vulnerable groups. Teaching and assessment of knowledge and skills are adjusted to students from under-represented and vulnerable groups. The HEI puts efforts to ease enrolment for students with lower socio-economic status and students with disabilities. HEI also shows good practice in helping students with disabilities with studying.

Out of three Faculty buildings, two have ensured access to students with disabilities. The third building cannot ensure the access for those students because it is a historical building and no construction work of this kind is allowed.

HEI has proved that it invests resources and time to support students from vulnerable and under-represented groups.

#### **Recommendations for improvement**

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

#### **Quality grade**

High level of quality

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

#### **Analysis**

Students are well informed about the opportunities for completing part of their study abroad. HEI is involved with Erasmus and CEEPUS programmes. HEI has a vice-dean for international cooperation and mobility and an Erasmus and mobility coordinator. From talking with students and staff the Panel concluded that there is a good opportunity for outgoing mobility and that a lot of students use it, especially the CEEPUS programme.

Students feel that the lecturers are capable of teaching in English. An example was given of students attending a course held in English because of a foreign student. HEI does not conduct a survey on student satisfaction with the quality of the support provided by HEI regarding mobility. Although there is no documentation on this topic, the staff provided good examples of how they support incoming students.

The Faculty prepares students mostly for employment in the local industry. The Panel is of the opinion that students also gain competencies required for employment on an international level.

### Recommendations for improvement

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

### Quality grade

High level of quality

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

### Analysis

HEI has an English version of the web page where all information regarding enrolment and study programmes is available. HEI also delivers courses in English.

HEI provides good support to foreign students in enrolment and during their stay in Slavonski Brod. The Faculty does not systematically collect and store feedback on satisfaction and needs of foreign students. Teachers involved in mobility keep a personal record on this topic.

In the SER a complete number of students involved in incoming mobility since 2013 is mentioned. Foreign students have the ability to learn Croatian as Croatian language classes are organised for them. There is no information on the number of foreign students involved in learning the Croatian language.

As mentioned in 3.6., the Faculty is involved in Erasmus and CEEPUS exchange programmes and has an established office for international cooperation.

### Recommendations for improvement

**Continue to increase the provision of non-Croatian courses.  
Collect more information on the satisfaction of international students.**

### Quality grade

Satisfactory level of quality

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

Criteria and methods for evaluation and grading are clear and published before the beginning of a course. Also they are mentioned in every course in the introductory lesson. HEI showed proof that criteria and methods for evaluation and grading are aligned with the teaching methods used. Staff gave an example of functional student appeals procedure regarding a course that was too hard. After the appeal the Faculty appointed another teacher to give lectures in cooperation with the existing teacher in an attempt to solve the existing problem. HEI provides support to the assessors in the development of skills related to testing and assessment methods. After finishing their PhD all assistants must finish a programme of psychological-pedagogical and didactic-methodological training.

There is no system and no specific procedures for ensuring objectivity and reliability of grading. It is decided solely by the teachers. Teachers gave examples on how they ensure objectivity. One of the ways is all teachers of one course to grade the exams together.

The SER does not address this section well. Most of it describes the appeals process if the student feels that their grade is inappropriate. However, this may be a reflection on the way that this, in common with other Croatian institutions are organised, with the professor being solely in charge of the course, including moderation and marking.

#### Recommendations for improvement

**A more systematic approach to ensuring objectivity is required. One of the ways to improve this is by implementing internal and external revision of exams. As described above, a more collegiate system would reduce the number of appeals and let the students be more aware of the fairness of what is done. This is not to say that the system is in any way unfair or out of kilter with the standards required. The Panel were informed by all parties that the students were treated fairly throughout the process.**

#### Quality grade

Satisfactory level of quality

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

#### Analysis

HEI issues Diploma Supplements. During the visit examples were provided. The Panel concluded that all documents are appropriate.

#### Recommendations for improvement

#### Quality grade

High level of quality

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

#### Analysis

The HEI does not have an established database of contacts with alumni and employers, but there is enough evidence and feedback from the alumni and employers that prove that there is a strong cooperation. Coming from this strong cooperation students are generally well informed about the opportunities of finding employment after graduation in the local economy.

Admission quotas are mostly aligned with the local labour market needs, and have seen a recent increase. The new study programmes should increase the scope of students to study

here. However, there may be a tendency for these new programmes to take over students from the existing programmes, increasing the workload without an associated increase in student numbers.

The HEI, once a year, organises a careers day in partnership with employers. Most of the graduates find their initial employment in these companies.

Alumni and employers are generally well satisfied with the level of involvement and cooperation. HEI showed evidence of the involvement of alumni and employers in the making of new or re-evaluating the existing study programmes.

### Recommendations for improvement

**Although there is a good connection with the local industry, the Panel is of the opinion that more can be done in presenting career choices to students at the national level. Furthermore, additional support for careers planning, CV writing and applications could be provided locally.**

### Quality grade

Satisfactory level of quality

## IV. Teaching and institutional capacities

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

#### Analysis

The total number of employees is 82 which includes 30 members of staff elected to scientific-teaching titles, 2 elected to education titles and 18 associates, 4 in professional roles and 28 technical, administrative and support staff. In addition, the Faculty has 32 researchers.

Eighty percent of norm teaching hours are provided by the Faculty staff. The staff-student ratio has fluctuated between 22 to 27 from 2012 to 2017 lying at 24 for the academic year 2016/17. If associates are also included, then the ratio drops to just under 16 for 2016/17. This ratio is not inconsistent with similar institutions. Data on workload is provided and the distribution across staff is reasonably equitable.

On initial inspection the staff workload (direct contact hours) is quite high, restricting time for scientific activities. When discussed with the teaching staff, the general consensus was that more teaching staff should be employed. The typical workload of teaching associates was discussed with the associates and in some cases was high (20 hours contact a week). It was noted that for those associates undertaking a PhD, the high teaching loads will have impact on the time that they can commit to their doctoral studies,

### Recommendations for improvement

**It is suggested that the Faculty analyse the bottlenecks in teaching and seek to improve efficiency through adoption of greater teamwork, efficient teaching and assessment methods, and the use of ICT. In this regard there are some examples of good practice and the early career teaching staff and associates are very motivated to contribute to the redesign of one or two key modules.**

### Quality grade

Satisfactory level of quality

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

### Analysis

Recruiting and retaining new teachers is a challenge because of a cap on recruitment and the pay gap with industry. To address this, a two-fold strategy is employed. This includes replacing retired professors with new, more junior, appointments and also retaining the services of recently retired professors as teaching assistants. New appointments are advertised via the Official Gazette of Croatia in the daily press and websites. Successful candidates are required to produce evidence of completion of a programme of psychological-pedagogical and didactic-methodological training. The process of selecting candidates is consistent with other HEIs and it involves assessment of publication records, interview and public lecture.

### Recommendations for improvement

**There is no requirement from the Panel for improvement in this area, but the Panel trusts that the Faculty itself will continue with its efforts to improve this area of quality.**

### Quality grade

High quality

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

### Analysis

Teacher advancement is supported in a similar manner to recruitment with advertisement and interview/review. In general, teaching staff and associates are aware of the primary criteria for advancement. Presently, the primary criteria concern the publication of papers in Q1 journals. In this regard over one-third of publications from the Faculty are in Q1 journals. In addition to the promulgation of the primary criteria, the Faculty operates an annual prize for the best research paper in order to motivate staff.

### Recommendations for improvement

**An important component of staff development is regular (annual) appraisal and the setting of targets/objectives for the next year. In this regard, it is suggested that the Faculty consider implementation of such an approach.**

### Quality grade

Satisfactory level of quality

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

### Analysis

The Faculty requires all staff to complete a psychological-pedagogical and didactic-methodological training course. In addition, the University provides some training courses for the staff to support their development. Teaching associates are required to complete some training post-PhD if they are involved in teaching. Teaching associates can support laboratories and problem classes without undertaking any training. In 4.2 it was observed that the workload of some associates that are undertaking doctoral research can be quite high. As noted in 4.3 no evidence could be found of individual staff review and career planning.

The Faculty is involved in a number of international mobility programmes including ERASMUS. Whilst teaching staff are encouraged to collaborate and undertake longer visits to other institutions the teaching commitments make it difficult to organise. All doctoral researchers are required to undertake a period of three months at another institution prior to completion of their studies. This practice is commendable and will undoubtedly contribute significantly to staff development, career progression and building long-term collaborations. In terms of technology transfer and knowledge exchange many of the staff work closely with industry and a number work in their own companies. The contribution of these activities to staff development and the local industry is significant and great strength of the institution.

As discussed in the following section (4.5) the Faculty is progressing with its plans for the creation of a dedicated centre for knowledge exchange and technology transfer. In addition, a number of staff praised the support provided by the University for IP protection and start-ups/spinouts.

### Recommendations for improvement

**Improved mentoring and additional training courses on, for example, bid writing, paper writing, innovations in learning and teaching should be provided by the University. Such activities/support should be provided by the University, not each Faculty.**

### 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 Faculty is spread over four buildings and three sites covering around 4,500 sq.m. The main sites (centre of city) comprises the lecture halls, computing rooms, library, staff offices and professional/administration support. Two of the other buildings are located at the Duro Dakovic site and encompass the major area of the materials processing and testing laboratories as well as some teaching space. The Self-Evaluation Report provides a list of ongoing maintenance activities that have been undertaken to keep the buildings safe and fit-for-purpose. The maintenance that has been undertaken is barely adequate.

Of particular note is that at the last accreditation (2012) the Faculty reported plans to create a new Centre for Knowledge and Technology Transfer. Since 2012 a site and building have been acquired at the Duro Dakovic premises next to the two existing buildings owned by the Faculty. The Faculty is presently seeking funds to refurbish the building. Once complete this triplet of buildings at the Duro Dakovic site will provide the space needed to provide more extensive laboratory and practical work for students. The Panel do not consider that, in their present state, the facilities and infrastructure inhibit the goals and tasks stated in the Strategy.

There does not appear to be a very good practical side to the programmes. All of the experiments in the first three years seem to be materials ones. The students reported that these were very much demonstrations. It would be a major improvement if a more comprehensive experimental scheme were available to students. This would incorporate laboratories in more subjects like kinematics and fluid dynamics. It should be pointed out that good experiments for undergraduates in these subjects can be constructed in-house inexpensively. These issues are presently compounded by a lack of student-led societies and activities (section 3.4).

### Recommendations for improvement

**The dispersed nature of the Faculty buildings makes integration of facilities, staff and theoretical and practical elements of the programmes a challenge. Consideration should be given to options for single site location which might include relocating to Duro Dakovic site.**

**The Faculty should consider implementing more experimental and practical activities into their programmes. These could include more student-led experiments. It is appreciated that while space and resources are tight this will be difficult. The Faculty staff and, in particular the teaching associates, might consider novel, low-cost experiments and equipment that can enable experimental work such as Euler buckling, conservation of momentum, principles of thermodynamics, and manufacturing**

**principles. There exist a range of low-cost equipment such as desktop CNCs, RepRap printers which might be considered.**

### Quality grade

Minimum 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 considered to be too small and lacking in workspace for students. When asked, the students stated that there were only two workstations which is considered inadequate for the student numbers. Many students have their own laptops and access to the wireless network was considered to be good. While the Self-Evaluation Report mentions that the library has purchased a large number of books (1,250 in the last five years) the availability of key textbooks is considered to be inadequate by the students. A visit to the library confirmed the limited selection of textbooks and many out-of-date textbooks (such as Windows 95 User Guide).

In terms of learning support material the Faculty and all staff make lectures and support material available on CARNet lms - loomen. While the Panel did not audit the content of the portal a short demonstration showed well organised and complete resources. Furthermore, the resources that are uploaded are made available to all students studying Mechanical Engineering in Croatia. The Panel find the sharing of material across institutions to be an example of good practice and thought leadership in this area.

### Recommendations for improvement

**Both library facilities and student study space needs to be improved considerably. In the first instance it is not necessary to increase the space but to be creative about the use of existing space. This might include a programme of production of posters around the Faculty buildings that show research and key materials for different courses such as drawing standards. Such exhibits might also display student work (e.g. the top three product designs or reports) and artefacts from the research activities of professors or local industry.**

### Quality grade

Minimum level of quality

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

##### **Analysis**

The total annual operating budget is around HRK 21.2M. This is composed of:

- ~ HRK 15M state funding,
- HRK 4.7M tuition fees and publishing income,
- HRK 1M from post-graduate fees, professional projects and other sources, and
- HRK 0.5M from unspecified sources.

The proportion of operating budget spent on staff salaries is just under 70%. This figure is indicative of a limited capacity to invest in equipment and facilities.

Overall management of finances appears to be consistent with HE practice with the Dean having overall responsibility for Profit and Loss. The Faculty operate a number of annual calls for proposals for investments in equipment and projects. At least one of these is reserved for younger staff, doctoral students and teaching associates. In the account summaries provided there is no evidence of unnecessary overspending or inappropriate expenditure.

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

**Given the constraints on funding and facilities the Faculty manage their funds well and have, since the last accreditation, been able to generate funds that have enabled investment in equipment and facilities. In this regard, the Faculty may need to develop a longer-term investment plan that concentrates annual investment in particular areas so as to achieve a critical mass.**

##### **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**

Meeting with the Management revealed awareness of the importance of producing high quality and quantity of scientific research and consequently of related high quality publications. Important comments from the 2012 accreditation were that there are too few publications in high quality peer reviewed international journals. This was confirmed also in contacts with vice deans and individual teachers/researchers. While publication activities are still largely oriented on domestic journals (although many of these are international and with reasonable indexing), positive changes and initiative are obvious and are in line with recommendations of

previous accreditation which is commendable. In the past period a number of papers were published in relevant high-quality journals by the Faculty members. The Faculty argued that slower-than-desired improvement is related to difficulties in winning new research projects and grants. The Faculty members feel they are well supported in research and publication efforts but see their teaching workload as significant obstacle in achieving better results and productivity.

The Faculty encourages publication by awarding the author of the greatest number of scientific publications in a given year. However, this may be unfair towards younger researchers as senior researchers with a larger network are in a better position to compete for this. This also potentially fosters publication in lower-quality journals and conference papers (it is unclear whether conference papers are counted towards this), which would in any case be undesirable. Discussions with teachers, researchers and teaching assistants confirmed that they see these measures as relevant, valuable and effective.

A good initiative comes from the University, which since 2013 has published funding calls for projects aimed at young researchers to help them realize their research ideas. Likewise, the Faculty enables doctoral students to apply for financial support for their project ideas which they can work on within the framework of their doctoral research and which increases possibility and potential for subsequent publications. Due to insufficient funds, this valuable initiative has been temporarily suspended.

The Faculty and researchers actively keep detailed and current record of all publications both on the individual level of each researcher (CROSBI online database) as well as on institutional level (Quality Assurance Office).

In the period 2011-2016, 11 doctoral dissertations were defended at the Faculty with more currently being worked on. While the number is not particularly significant, it must be taken into account that it is directly related to the possibility of employing new researchers which at this point is suspended on a national level.

Results of research activities are actively promoted by the participation of the Faculty at international conferences. A number of these publications heavily depend on available funding which is another argument for increased efforts in obtaining new projects and related funding.

### **Recommendations for improvement**

**As the goal is to increase the number of high-quality publications, the Faculty should consider awarding authors not only for the volume of publications (i.e. author of most publications) but primarily authors of individual papers published in outstanding scientific journals (Q1 and Excellence category).**

**The Faculty should continue with financial support of project ideas and the initiatives of young researchers both at University and Faculty level.**

**Increase impact and visibility of the research by publishing in prominent and excellent journals, even if this initially leads to delay and rejection.**

**Continue with the efforts of obtaining funds and participation in major international projects.**

**Continue with the effort to decrease the teaching overload of teachers and assistants in order to increase capacity to work on research, projects and publications.**

### 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

SER and underlying documentation provides ample information and data regarding very intensive communication and information exchange on requirements, initiatives and development plans of various external stakeholders (industry and local/regional community).

This is reflected in the significant number of joint expert and industrial projects as well as other ways of cooperation and mutual support. This mutual support is evident in various possibilities of using available equipment and human resources. This was further confirmed during contacts and discussions with various external stakeholders (alumni, representatives of the industry, members of various societies and members of local civil society and education). It is apparent that the Faculty and its members and employees take their role in local and regional society in its further development very seriously and that significant effort is expended in developing this further. Large numbers of the Faculty are members of public and professional societies and local government bodies. Furthermore, individual faculty and management are members of management and advisory boards of local and regional companies.

There are examples of start-up/spin-off initiatives. Systematic support is available at specialized organizational unit/company at the University of Osijek.

The Faculty is continuously involved in a large number of industrial and expert projects, which is already identified as one of the institution's strong points. It was confirmed that this presents valuable vehicle for two-way transfer of knowledge and technology between involved stakeholders also with some indirect benefits (students, teaching process, possibilities for joint application for more significant projects of wider scope).

However, it seems that this is still to a significant extent result of activities and contacts of Faculty members on an individual basis. Efforts should be made to use this opportunity even more to make this process more systematic and measurable. The establishment of an Industrial Advisory Board and of a formal framework of some sort might improve both communication and realisation of future projects and technology/knowledge transfer.

The Faculty also organizes and actively participates in a number of events directed at increasing the engagement of different groups of the community and raising awareness of their field of activity.

### Recommendations for improvement

**Plan and implement organisational measures to raise establishment and following contacts and collaboration with the industry to a more systematic level.**

**The efforts, activities, results and especially effects deserve commendations and Panel members wish to encourage the Faculty and its members to continue with already established good practice.**

### Quality grade

High 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 Faculty fosters intensive contacts and collaborations with regional and international scientific/research and higher education institutions which is evident from a significant number of bilateral and collaboration agreements as well as CEEPUS and Erasmus agreements and projects. Teachers, especially young researchers and assistants, benefit from this through numerous study stays at other institutions.

Once established, these contacts are further nurtured and developed which is confirmed through a growing number of publications published in co-authorship with researchers from these and other institutions abroad. This is actively and systematically encouraged by addressing this in the strategy documents. It was confirmed that the Faculty (and its members) are recognized at the regional/national and international level which is confirmed through awards, active participation in organisation of national and international conferences, membership in various societies and scientific/organisational/editorial boards of conferences, societies and journals. It is recognized that these are not the result of just a few individual members but of a larger number of the Faculty which is good. Also, the Faculty and its members are aware of the fact that a large majority of them come from this institution, which may be considered as risk regarding a rather closed circle of ideas and initiatives and pay particular attention to make sure that contacts and exchange with external parties and partners are developed even more.

### Recommendations for improvement

**Encourage younger members of the Faculty to contribute and get involved as much as possible in activities of increasing the recognition of the Faculty at the regional and international level.**

**It is noted that all national and international grants terminate in the present year. The members of the Faculty should take a strategic approach to renewing this portfolio.**

### Quality grade

Satisfactory level of quality

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

##### **Analysis**

The Faculty possesses appropriate documents that define plans and activities on a strategic level - Strategic research agenda (2014-2018) and the Faculty Strategy (2015-2019) containing required elements. Analysis and reporting on realization of the strategy is performed on an annual basis and review of the SER as well as individual annual reports suggest that they are well aligned and that performance and fulfilment of individual tasks are monitored regularly. Strategy for the time period from 2019 and beyond is currently being prepared and is due for publication in December 2018.

The resources needed for scientific and research activities are of limited nature but do not bring into question achievement of the goals and tasks stated in the Strategy. The number of researchers at the Faculty is 32 which is deemed to be sufficient and in line with official requirements. There are challenges in the availability of appropriate buildings/space and equipment which need to be overcome. Analysis reveals that the Faculty addresses these issues and certain improvements have been achieved in the past period. A significant quantity of new valuable equipment has been acquired in the framework of recent projects and the Faculty is making the effort to purchase new spaces and consolidate the existing ones. While the situation is not completely satisfactory, it is understood that any change and improvement is a long-term process and is also influenced by external factors which are not completely controlled by the Faculty alone. Efforts, measures and preparations which are underway (current and new project applications, plans to create a new Centre for Knowledge and Technology Transfer, the new site and building acquired at the Duro Dakovic premises and plans for its refurbishment) show that there is a clear, strong vision and intent to improve in this regard and this needs to be continued.

The Faculty has provided a Financial plan in which income and expenses for the upcoming period exist and it indicates sufficient sustainability. Report on the fulfillment of financial plans would have to be made available as well. There are a number of project applications that were submitted (49 applications in the period 2015-2017) some of which, if successful, will help to improve this situation and hence the sustainability of the planned research. The Panel was informed that in the period after SER submission, a major research project that the Faculty applied for in partnership with industrial partner (total value 14M kuna) was accepted for financing.

The Faculty provides very good opportunities and actively supports mobility and research result dissemination through a number of measures. This is especially valid and valuable for young research staff and teaching assistants. They are additionally supported during most sensitive periods of work on their doctoral research which they find particularly valuable. They are also actively encouraged to attend conferences and are directed to spend time abroad at partner institutions. Systematic measures and financial support have been introduced enabling the Faculty members to apply for the financing of small scale projects and the purchase of needed equipment throughout the year.

The Faculty has measures in place for recognizing and awarding excellence of its researchers for their achievements in scientific publications, cooperation with the industry and scientific/expert projects.

#### Recommendations for improvement

**Establish systematic support for project application and project pipeline management in order to better plan and monitor this income stream and way of development.**

#### Quality grade

Satisfactory level of quality.

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

#### Analysis

According to the information from SER as well as that from discussions with heads of study, teachers, assistants and students, the available equipment acquired through different means is made available to students of all levels of study. Certain equipment is used less, especially the newer one and with excessive emphasis on demonstration as opposed to practical use. Supposedly as it is additional task to prepare its inclusion into the active teaching process. However, this is strongly encouraged.

While undergraduate and graduate students are actively encouraged to get involved in research projects, this proves to be a challenge, partly due to a lack of interest of students, according to information from the Faculty. However, it must be noted that this may also be attributed to the fact that there are no systematic measures or information dissemination but it is mostly left to individual initiative of professors and/or their assistants. Even with this approach, every 5<sup>th</sup> graduate student publishes a paper with his/her supervisor. The number of papers published in co-authorship with students seems to be rather similar (on the average) to the previous period. Considering that the new study programme was recently introduced, this number should have increased.

A selected number of students are introduced to project application activities and involved in their preparation. During interviews, students pointed out that more information in this regard would also be welcome. The resources needed for the current scientific and research activities can be seen as limited but do not bring into question achievement of the goals and tasks stated in the Strategy.

#### Recommendations for improvement

**Increase practical (hands-on) usage of equipment in teaching process.**

**Develop more systematic, faculty-wide measures for informing students about possibilities of involvement in research and industrial/expert projects.**

**Include newly acquired equipment into teaching process/exercises in a more intensive manner.**

**Increase the number of students involved in scientific/expert projects and consequently, number of joint publications.**

Quality grade

Satisfactory level of quality.

## **APPENDICES**

**1. Quality assessment summary - tables**

**2. Site visit protocol**

*Quality grade by assessment area*

<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.			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

## *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.			X	
2.2. The intended learning outcomes at the level of study programmes delivered by the higher education institution are aligned with the level and profile of qualifications gained.				X
2.3. The higher education institution provides evidence of the achievement of intended learning outcomes of the study programmes it delivers.			X	
2.4. The HEI uses feedback from students, employers, professional organisations and alumni in the procedures of planning, proposing and approving new programmes, and revising or closing the existing programmes.			X	
2.5. The higher education institution ensures that ECTS allocation is adequate.			X	
2.6. Student practice is an integral part of study programmes (where applicable).		X		
2.7. Lifelong learning programmes delivered by the higher education institution are aligned with the strategic goals and the mission of the higher education institution, and social needs.				X

### *Quality grade by standard*

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

### *Quality grade by standard*

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

### *Quality grade by standard*

<i>V. Scientific/artistic activity</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
5.1. Teachers and associates employed at the higher education institution are committed to the achievement of high quality and quantity of scientific research.			<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>	

**Reakreditacija Strojarskog fakulteta u Slavonskom Brodu  
Sveučilišta Josipa Jurja Strossmayera u Osijeku /  
Re-accreditation of the Faculty of Mechanical Engineering in  
Slavonski Brod, Josip Juraj Strossmayer University of Osijek**

**PROTOKOL POSJETA / VISIT PROTOCOL**

**Ponedjeljak, 14. svibnja 2018./ Monday, 14<sup>th</sup> May 2018**

Agencija za znanost i visoko obrazovanje /  
Agency for Science and Higher Education

Adresa / Address: Donje Svetice 38/V, Zagreb

**10:00 – 12:00** Edukacija članova stručnog povjerenstva – kratko predstavljanje Agencije, upoznavanje sa sustavom visokog obrazovanja u Republici Hrvatskoj, upoznavanje s Postupkom reakreditacije, Standardima za vrednovanje kvalitete i pisanjem završnog izvješća / Training for the expert Panel members – short presentation of ASHE, introduction to the higher education system in Croatia, introduction to the re-accreditation procedure, standards for the evaluation of quality and writing the final report

**12:00 – 12:30** Ručak/Lunch

**12:30 – 15:00** Priprema povjerenstva za posjet Strojarskom fakultetu u Slavonskom Brodu (rad na Samoanalizi)/Preparation of the expert Panel members for the site visit (working on the Self-evaluation)

**15:15** Polazak za Slavonski Brod, organizirano kombijem / Departure to Slavonski Brod, by van, organized by Agency

**Utorak, 15. svibnja 2018./ Tuesday, 15<sup>th</sup> May 2018**

Strojarski fakultet u Slavonskom Brodu Sveučilišta Josipa Jurja Strossmayera u Osijeku /  
the Faculty of Mechanical Engineering in Slavonski Brod, Josip Juraj Strossmayer  
University of Osijek

Adresa/Address: Trg Ivane Brlić Mažuranić 2, Slavonski Brod

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

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

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

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

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

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

**14:30 – 15:15** Sastanak s članovima Alumni kluba / Meeting with the Alumni

**15:15 – 15:20** Pauza / Short break

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

**16:00 - 17:00** Organizacija dodatnog sastanka o mogućim otvorenim pitanjima prema potrebi / Additional meeting on open questions, if needed

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**Hotel u Slavonskom Brodu / Hotel in Slavonski Brod**

**18:00 – 21:00** Sastanak Stručnog povjerenstva – refleksija o viđenom i priprema za idući dan posjeta / Joint meeting of the expert Panel members – reflection on the day and preparation for the second day of the site visit

## **Srijeda, 16. svibnja 2018./ Wednesday, 16<sup>th</sup> May 2018**

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

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

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

**11:00 – 11:05** Pauza/ Break

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

**11:45 – 11:50** Pauza / Break

**11:50 – 12:30** Sastanak s prodekanom za znanost i prodekanom za međunarodnu suradnju i mobilnost / Meeting with the Vice dean for science and Vice dean for international cooperation and mobility

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

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

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

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

**16.45 – 17:30** Interni sastanak članova Stručnog povjerenstva, priprema za završni sastanak / Internal meeting of the Panel members, preparation for Exit meeting

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

**17:45** Odlazak u Zagreb / Departure to Zagreb

**Četvrtak, 17. svibnja 2018./ Thursday, 17<sup>th</sup> May 2018**

**Hotel International, Miramarska ulica 24, Zagreb**

**10:00 – 13:00** 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

**13:00 – 14:00** Ručak / Lunch

**14:00 – 16:00** Nastavak sastanka 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

## ***SUMMARY***

The Faculty is currently undergoing re-accreditation. The previous one in 2012 was successful, but the team brought up a number of issues, notably:

- 1) Lack of space;
- 2) Work overload of teachers;
- 3) Poor laboratory equipment; and,
- 4) Lack of mobility of teachers and students.

The 2018 Panel examined these. They noted that the space issue is still critical but there are a number of plans to update these, including development of the industrial site. The work overload of teachers is still present, but it is hoped that the relaxation of recruitment and the introduction of targeted innovations in teaching methods to improve efficiency will ameliorate this. There has been an increase in movement of staff and students via Erasmus and the requirement for doctoral students to spend three months at another HEI, ideally overseas, are very positive. The lack of laboratory equipment and student engagement in practical activities is still noticeable and the Faculty are strongly encouraged to prioritise this in their planning. The Panel note that since the last accreditation the Faculty has undertaken a programme of equipment purchase and that supports both research and teaching. In this regard, the Faculty have made considerable progress but the Panel would encourage the Faculty to decouple teaching and research in order to explore low-cost equipment that directly supports increase in practical and application of taught material for all students.

For the present reaccreditation, the Panel noted that these issues were still the most critical, and would like to see more staff, space and equipment to allow the Faculty to be able to develop and improve as they clearly desire.

Generally, the Faculty is clearly compliant with the requirements of the 2017 procedures. The management, ably led by the Dean is in control of staff, finances, teaching and research. The senior management team support this vision and are actively involved in the strategy, planning and operationalisation thereof.

The teaching is, although rather theoretical, of high quality and the curriculum is both appropriate and well taught. The three-year course provides a good theoretical background into engineering science, and the additional two-year masters adds quality and a more practical skillset to this. It is noted with approval the collaborations with the local industries. This two-way exchange ensures the relevance of the courses and is to be celebrated. The Panel would encourage deeper and broader engagement of the local industry in the development of course content and support for research. Correspondingly, the Panel suggests that the Faculty convene an Industrial Advisory Board that meets at least twice a year.

The overall student experience is considered to be satisfactory to good. As previously noted facilities and equipment are limiting factors and the Faculty is working hard to mitigate these. While the Self-Evaluation Report highlights a high level of satisfaction across the student body, particularly in regard to their interaction with the management, the Panel suggests that the Faculty convene a Staff-Student Liaison Committee (SSLC). The SSLC should be comprised of

representatives from each year group and heads of study. The SSLC should meet monthly to provide continuous input into the improvement of taught programmes and remedying of any issues experienced in a timely manner.

Research is conducted by almost all staff. However, the Panel would like to see the staff raising their aspirations particularly in terms of international journal publications. It would be good for the management to encourage this to happen, although it is noted that the current metrics measure short-term, adequate outputs rather than celebrating excellence, which may need to run on a longer timescale. Also, some of the research is reported to be held up due to a lack of equipment. The Panel would note that it is perfectly possible to do excellent research with simple and cheap infrastructure, as exemplified by the additive manufacturing laboratory.

Staffing continues to be problematic. The current freeze on hiring has created a number of problems, including overwork and a shortage of more junior staff. The Faculty is aware of this and wishes to change it, but with the current climate, it is not possible. The Panel note positively the strategy of the Faculty to utilize the recently retired staff in combination with the recruitment of junior staff.

Likewise for space, the Faculty has plans to expand and move some of its facilities, but these need more support to take place, and as previously noted, where possible equipment to support the teaching should be prioritised in the first instance.

Mobility of staff, and undergraduate and postgraduate students has improved markedly. The Faculty is to be praised for this. However, the Panel noted that there was little permanent movement of staff from and to other Croatian universities. While this is a countrywide issue, it does reduce the cross propagation of ideas and best practice.

The quality assurance of the teaching was clearly acceptable, and the Faculty was seen to comply with all of the requirements of ASHE. Compared with some other national systems, there was a certain lack of internal scrutiny and validation by staff who were not actually teaching on the course. Correspondingly, the Panel would recommend the implementation of improved internal controls for reviewing new exam papers and for checking the consistency of marked papers.

In conclusion, the team on the reaccreditation were generally pleased with the way the Faculty was run. The improvements since the last cycle were palpable and their aspirations and management were in line with what one would expect. It is clear that with more resources they could deliver better teaching and research and it is hoped that these can be provided in the future.