



agency for science and higher education

**REPORT
OF THE EXPERT PANEL
ON THE
RE-ACCREDITATION OF
FACULTY OF TRANSPORT AND TRAFFIC SCIENCES
UNIVERSITY OF ZAGREB**

**Date of site visit:
13 - 15 November 2018**

December, 2018.

MAMFORCE



The project is co-financed by the European Union from the European Social Fund. The contents of this document are the sole responsibility of the Agency for Science and Higher Education.

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INTRODUCTION

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

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

The Agency's Accreditation Council appointed an independent Expert Panel for the evaluation of Faculty of Transport and Traffic Sciences, University of Zagreb.

Members of the Expert Panel:

- Assistant professor Andrea D'Ariano, Engineering department, University Roma Tre, Republic of Italy, Panel chair,
- Assistant professor Alexei Sharpanskykh, Faculty of Aerospace Engineering, Delft University of Technology, Kingdom of the Netherlands,
- Assistant professor Josip Balen, Faculty of Electrical Engineering, Computer Science and Information Technology of Josip Juraj Strossmayer University of Osijek, Republic of Croatia,
- Assistant professor Siniša Vilke, Faculty of Maritime Studies of the University of Rijeka, Republic of Croatia,
- Kristijan Nikolozo, student, Faculty of Maritime Studies of the University of Rijeka, Republic of Croatia.

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

- Management,
- Self-evaluation report committee,
- Students,
- Alumni,
- External stakeholders - representatives of professional organisations, business sector/industry sector, professional experts, external lecturers,
- Group of people responsible for revision of study programmes (bachelor and master),

- Full-time employed teachers,
- Teaching assistants,
- Heads of research projects,
- Heads of divisions and departments,
- The vice-dean for administrative and business affairs,
- Vice-dean for education and student affairs,
- Vice-dean for science and external cooperation.

The Expert Panel members had a tour of the student administration office, library, international office, classrooms, laboratories and participated in teaching classes, where they held a brief Q&A session with students. The Panel visited four locations: Vukelićeva 4, Kušlanova 2, campus Borongaj and Lučko airport.

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

The Expert Panel drafted this Report on the Re-Accreditation of Faculty of Transport and Traffic Sciences on the basis of the Faculty of Transport and Traffic Sciences Self-Evaluation Report, other relevant documents and site visit.

The Report contains the following elements:

- Short description of the evaluated higher education institution,
- Brief analysis of the institutional advantages and disadvantages,
- List of institutional good practices,
- 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 Transport and Traffic Sciences and writing of the Report, the Expert Panel was supported by:

- Ivana Borošić, coordinator, ASHE,
- Iva Žabarović, coordinator, ASHE,
- Marko Hrvatin, interpreter at the site visit and translator of the Report.

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

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

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

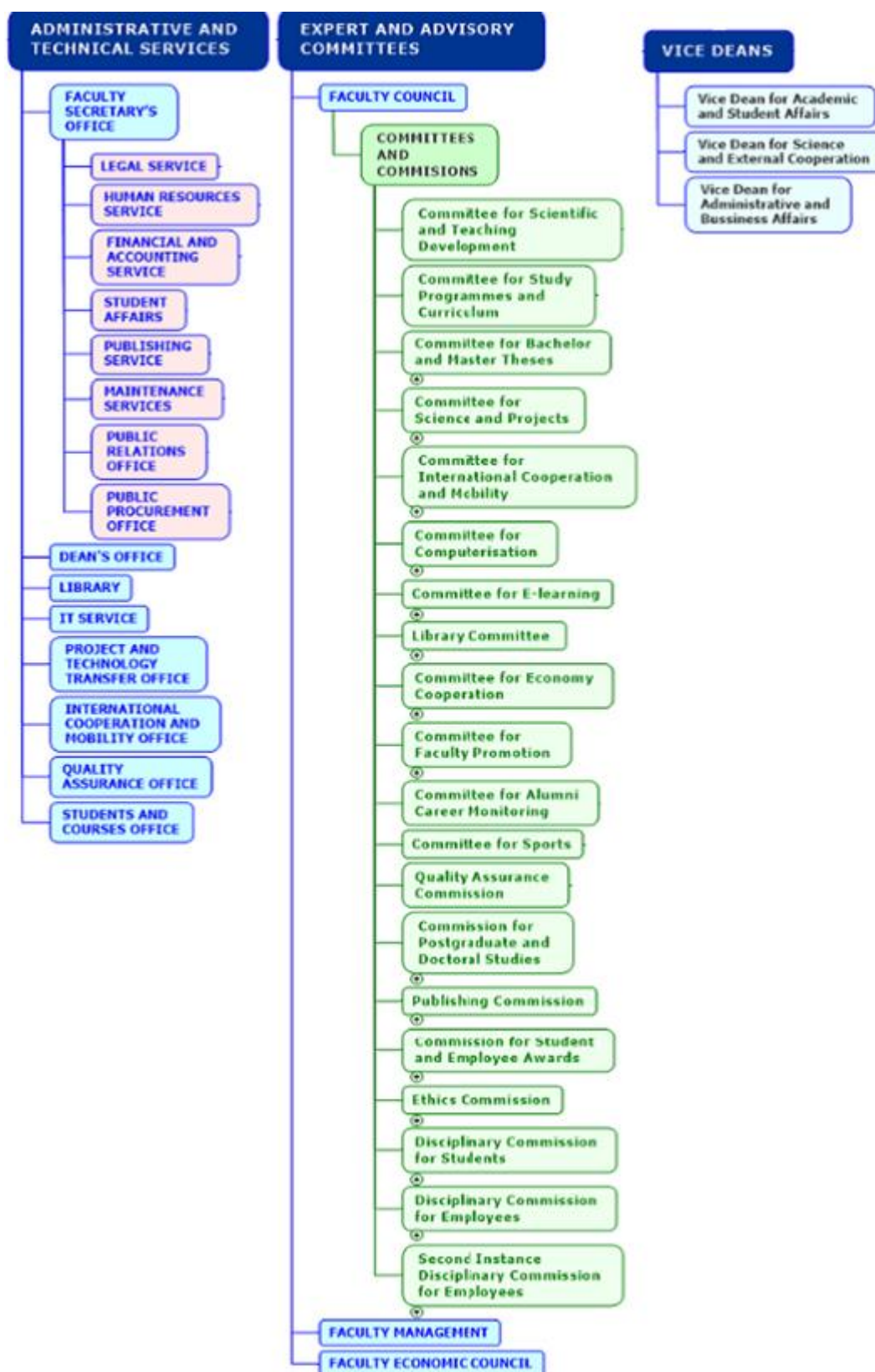
SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

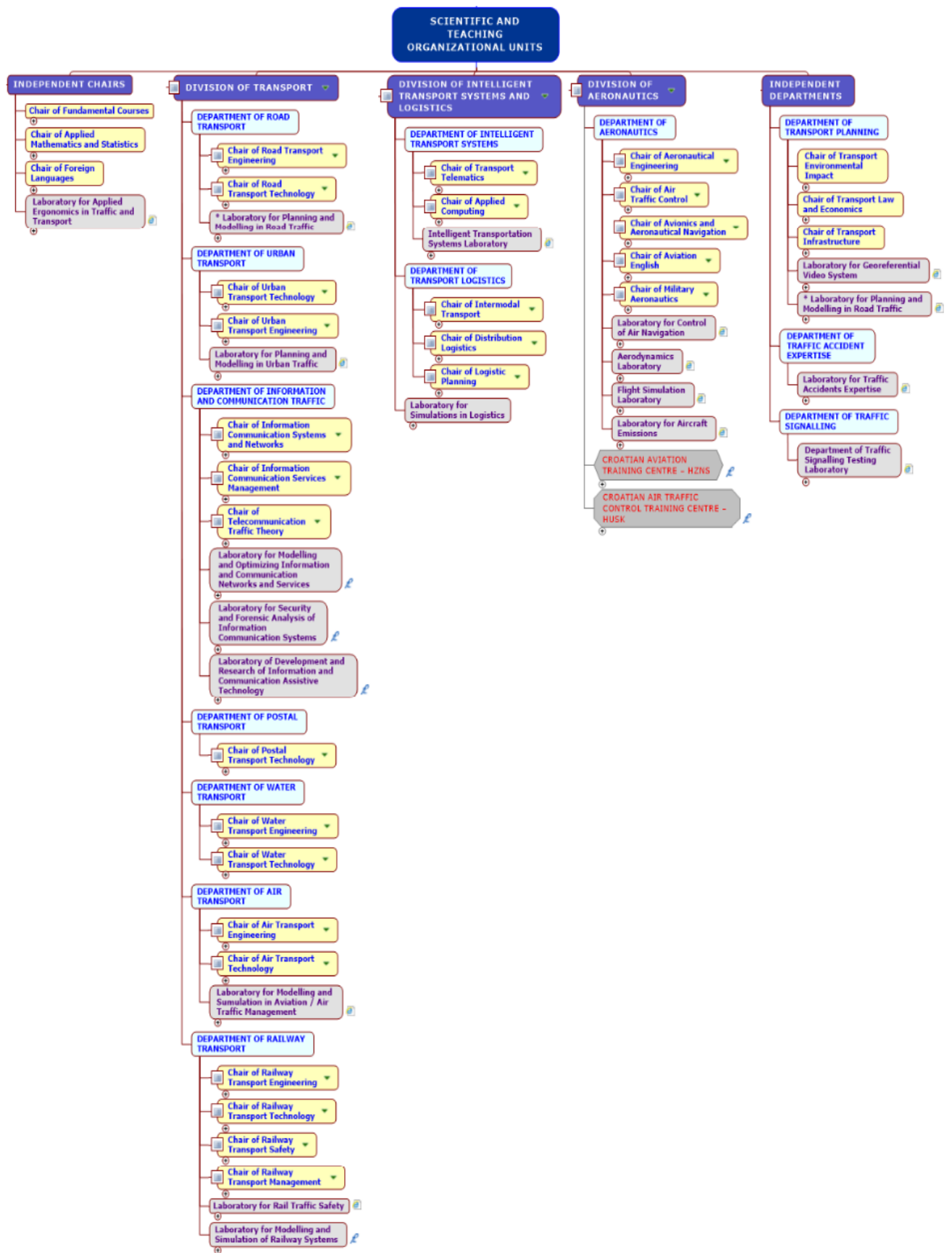
NAME OF HIGHER EDUCATION INSTITUTION: Faculty of Transport and Traffic Sciences (also named Faculty or HEI in this document)

ADDRESS: Vukelićeva 4, 10 000 Zagreb

DEAN: Prof. dr. sc. Tomislav Josip Mlinarić

ORGANISATIONAL STRUCTURE: Self-evaluation, page 5





STUDY PROGRAMMES: Self-Evaluation, pages 8 and 9

a) Pre-diploma studies	First year	Second year	Third year / concentration	180 ECTS credits Academic title / abbreviation
Transport	Common core curriculum in Transport	Common core curriculum in Transport	Road	university <i>prvostupnik</i> / <i>prvostupnica</i> (baccalaureus / baccalaurea) transport engineer (univ. bacc. ing. traff.)
			Urban	
			Information-communication	
			Postal	
			Water	
			Air	
			Railway	
Intelligent transport systems (ITS) and logistics	Common core curriculum in ITS and logistics	Common core curriculum in ITS and logistics	Intelligent transport systems	university <i>prvostupnik</i> / <i>prvostupnica</i> (baccalaureus / baccalaurea) transport engineer (univ. bacc. ing. traff.)
			Logistics	
Aeronautics	Concentration: Pilot	Civil pilot		university <i>prvostupnik</i> / <i>prvostupnica</i> (baccalaureus / baccalaurea) aeronautical engineer (univ. bacc. ing. aeronaut.)
		Military pilot		
	Concentration: Air Traffic Control			

b) Diploma studies	First and second years / Concentration	120 ECTS credits Academic title/abbreviation
Transport	Road	<i>magistar / magistra</i> transport engineer mag. ing. traff.
	Urban	
	Information-communication	
	Postal	
	Water	
	Air	
	Railway	
Intelligent Transport Systems and Logistics	Concentration: Intelligent Transport Systems	<i>magistar / magistra</i> transport engineer mag. ing. traff.
	Concentration: Logistics	
Aeronautics	Aeronautics	<i>magistar / magistra</i> aeronautical engineer mag. ing. aeronaut.

c) Post-diploma studies	Length of study / ECTS credits	Academic title / abbreviation
Doctoral studies in Technological Systems in Traffic and Transport	three years / 180 ECTS credits (the most recent cohort of students was enrolled in 2017/2018)	doctor of science in the technical sciences of traffic and transport technology dr. sc.
Doctoral studies in Transport	three years / 180 ECTS credits (the first cohort will be enrolled in 2018/2019)	doctor of science in the technical sciences of traffic and transport technology dr. sc.
Specialisation studies in Urban Transport	one year / 60 ECTS credits	university specialist in urban transport univ. spec. traff.
Specialisation studies in Intermodal Transport	one year / 60 ECTS credits	university specialist in intermodal transport univ. spec. transp.
Specialisation studies in Transport Logistics and Management	one year / 60 ECTS credits	university specialist in transport logistics and management univ. spec. logist.

NUMBER OF STUDENTS: Analytical Self-Evaluation, page 2, table 3.1. Number of students per study programme for the current academic year: 1525 full-time students and 587 part-time students.

NUMBER OF TEACHERS: Analytical Self-Evaluation, page 11, table 4.1.a. Staff structure: 70 staff members, including full professors with tenure, full professors, associate professors, assistant professors and teaching grades.

SHORT DESCRIPTION OF THE EVALUATED HIGHER EDUCATION INSTITUTION

Self-Evaluation, pages 2 and 3

The Faculty of Transport and Traffic Sciences was founded within the University of Zagreb pursuant to a decision of the District Economic Court in Zagreb of 10 October

1984, which recognised the Faculty as an independent organisation for research, science and teaching of special interest for society.

The beginning and transport and traffic studies in Croatia is linked to the enrolment of the first generation of full-time students at the College of Post, Telegraphs and Telephones in Zagreb in October 1962. The College carried out its activities in a newly constructed building at Vukelićeva 4 in Zagreb, which today serves as the Faculty's headquarters. In 1968, Inter-Faculty Traffic Studies were founded at the University of Zagreb, involving seven faculties.

Between 1986 and 2005, the Faculty offered professional studies (level VI) and university studies (level VII) in the fields of road, rail, and river transport and traffic as well as in the area of post, telegraphs and telephones. In 1992, an aeronautics study programme for the training of civil pilots and flight controllers (level VI) as well as for the training of military pilots (level VII) was launched and its first generation of students enrolled.

In 1997, the Faculty of Transport and Traffic Sciences launched a postgraduate study programme and enrolled its first generation of students into scientific master's and professional master's studies. In 1999, a doctoral programme was launched and the first generation of doctoral students was enrolled.

Since 2005, the Faculty has aligned its educational provision with the Bologna Process with respect to the following three study programmes at the undergraduate level (three years) and graduate level (two years): Traffic, Intelligent Transport Systems and Logistics, and Aeronautics. In the same year, the Faculty launched doctoral studies aligned with the Bologna Process.

A systematic solution to the problem of ensuring adequate space for the Faculty's operation and development has not yet been found. In autumn 2007 and during 2008, a part of the Faculty moved to specially adapted buildings on the scientific-teaching campus Borongaj.

As a result, the Faculty currently carries out its activities on four locations: Vukelićeva 4, Kušlanova 2, the scientific-teaching campus Borongaj and the Lučko airport. This airport is also the home of the Croatian Aviation Training Centre, an organisational unit of the Faculty that provides flight training to aeronautics students aiming to become civil pilots. On the Borongaj campus, the Faculty was originally housed in Buildings 70 and 71. In 2014, the Faculty renewed, remodelled and outfitted the abandoned Building 69, where an amphitheatre, classrooms and teacher offices were constructed. One section of Building 210 was also remodelled to house two laboratories and classrooms. In 2018,

another three sections of Building 210 were handed over to the Faculty for its use, and remodelling work has begun.

The fact that teaching and other activities of the Faculty take place at multiple locations creates substantial organisational problems for students and teachers. Therefore, it is envisaged that the entire Faculty will move to the scientific-teaching campus Borongaj, except for the civil pilot aviation training, which will remain at the Lučko airport. To achieve this goal, the Faculty has completed the construction and legal planning for a new building at the university section of the Borongaj campus. To create conditions for the expansion of the Faculty's teaching, scientific and research activities until the new building is constructed, a feasibility study was carried out to assess the possibility of adapting the attic space of Buildings 70 and 71 at the Borongaj campus, for which the initial funding was granted by the Ministry of Science and Education. To advance teaching at the Lučko airport, a feasibility study was carried out to assess the possibility of setting up Lučko Centre for Aviation Training.

BRIEF ANALYSIS OF THE INSTITUTIONAL ADVANTAGES AND DISADVANTAGES

ADVANTAGES OF THE INSTITUTION

1. Considerable cooperation with the business sector and industry, which contributes to the economy and local community development.
2. Strong links and collaboration with diverse industrial and governmental organisations, which actively influence the study programmes, ensuring better alignment of the programmes with professional standards, requirements, and developments.
3. Premises are equipped with simulators and infrastructure elements that support research activities and development of projects by both staff and students.
4. Effective and sustainable institutional capacities and mechanisms with a satisfactory level of equipment quality and support for institutional and staff development.
5. Constant transfer of knowledge and technologies between the Faculty and partners in industry. Evidence was provided in the form of numerous ongoing scientific and professional projects and workshops/events with industrial partners and public sector entities.

DISADVANTAGES OF THE INSTITUTION

1. Faculty regulations do not mandate the application of a software-based plagiarism detection tool in analysing bachelor, master, and doctoral thesis to prevent academic plagiarism.
2. The forms and methods of student assessment are not clearly related to the intended learning outcomes of the study programmes. The allocation of ECTS credits to different courses was not always perceived as adequate and balanced by the students.
3. Admission criteria for some of the study programmes provided by the Faculty are not aligned with the requirements of those study programmes. Also, enrolment quotas for some study programmes are not aligned with the employability of the graduates.
4. Limited teaching capacities and a large number of students represent a risk of impaired study quality.
5. The Faculty does not provide systematic support and implement measures to encourage the development of innovation and improve scientific productivity. The number of high-quality publications and citations in relevant databases is still limited.

LIST OF INSTITUTIONAL GOOD PRACTICES

EXAMPLES OF GOOD PRACTICE

1. Intensive development of lifelong learning programmes and their improvement in accordance with participant evaluations and social needs.
2. Organisation of roundtable discussions with the Economic Council of the Faculty several times a year, which results in a better synergy among the Faculty, regional industry, and society.
3. Open access to laboratories; management staff available to students at all times.
4. Management of financial resources is rational and sustainable; support is provided in the process of project application; excellence is rewarded; the Faculty invests in teacher development and equipment, while attracting a significant share of funds from professional projects.
5. Continuous involvement of students at all study levels in scientific and professional activities coordinated by various research centres, departments and Faculty chairs, with some recent achievements at international conferences.

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 system of the Faculty includes all of its activities. The Faculty stakeholders as well as student and alumni representatives participate in the internal quality assurance system through the involvement in the Quality Assurance Commission. The Faculty has implemented a development strategy, including the 5-year Program of Scientific Research. The development strategy comprises the mission and the vision of the HEI, the strategic goals, including the related measures and action plans based on the SWOT analysis, as well as the responsibilities for the strategy implementation and the plan for its realization. The Faculty uses various methods to gather data on quality, which is afterwards analysed; however, feedback from stakeholders is not broadly used to improve the Faculty activities.

The Faculty has analysed the deficiencies identified in the previous re-accreditation procedures and has implemented numerous measures in line with the recommendations for improvement.

The Faculty has implemented the new Ethical Code with a view to preventing unethical behaviour, intolerance and discrimination, while the Ethics Commission has been established to monitor the adherence to moral principles and professional ethics. A software programme, as a plagiarism detection tool for bachelor, master or doctoral thesis, is not obligatory and therefore teachers do not apply it. To avoid issues of academic dishonesty, the Expert Panel finds the implementation of a plagiarism detection tool and the analysis of its results extremely important.

All relevant regulations and documents, including learning outcomes and curricula, are available on the Faculty website, although most of them only in the Croatian language. In order to inform the stakeholders about all of its activities and its social role, the Faculty organizes various academic meetings, including professional and scientific workshops, project presentations, etc.

The Faculty closely collaborates with the business sector and industry, which is particularly evident in an intensive cooperation on various professional projects. In addition, the teachers are included in social-impact work and in various decision-making activities of public interest, thus contributing to the development of the national economy and the local community.

The Faculty implements lifelong learning programmes by organising various conferences, workshops and events within 3 departments: the Department of Aeronautics, the Department for Road Transport, and the Department of Transport Logistics. The general goals of these programmes are consistent with the mission and strategy of the Faculty as well as the needs of society.

Recommendations for improvement

The Panel has the following recommendations:

- Consider the feedback from stakeholders and the results from surveys and incorporate this information into the mechanisms for the improvement of the Faculty's activity and further development.
- Encourage the employees to make more use of the possibilities provided by the internal quality assurance system, e.g. the possibility of standards of quality non-conformance notifications.
- Continue the implementation of the recommendations for improvement made during previous re-accreditation procedures in accordance with the adopted plans.
- Establish an obligatory procedure for the use of a software programme as a plagiarism detection tool for analysing bachelor, master and doctoral thesis.
- Provide all regulations, documents as well as other relevant information in both the Croatian and the English language on the Faculty website.

Quality grade

Satisfactory level of quality

II. Study programmes

Analysis

The general objectives of the study programmes and the individual courses are well in line with the mission and the vision of the Faculty. The Faculty ensures that the programmes are in line with up-to-date professional and societal requirements, needs, standards, and developments by maintaining strong links and organising frequent meetings with industrial and societal organisations. Feedback from students is also taken into account in the improvement of the study programmes; however, explicit mechanisms for this are not always clear. The analysis of resources, required for the delivery of the study programmes, is often either limited or missing.

The learning objectives and the intended learning outcomes of the study programmes and the individual courses are mutually well-aligned. However, the methods and means

of assessment of the achievement of the learning objectives by the students are not clearly related to the intended learning outcomes.

The Faculty is currently developing new study programmes, which will be better aligned with the Croatian Qualifications Framework and needs and requirements of society and industry.

The allocation of ECTS credits is specified for the learning activities of each course. However, students perceived that the ECTS allocation could be better balanced and harmonised among different study programmes.

Student practices play an important role in gaining practical skills outside the university; however, precise mechanisms related to the allocation of student workload (ECTS in particular) and the assessment methods are not clear. Unemployment rates of the graduates vary; for some programmes, for example, Traffic and Transport and Intelligent Transport Systems and Logistics, these rates are rather high.

Recommendations for improvement

The Panel has the following recommendations:

- A more detailed analysis of resources, required for delivering every study programme, needs to be performed.
- A better analysis of the unemployment statistics of the graduates is required, especially for the Traffic and Transport and Intelligent Transport Systems and Logistics programmes.
- The positive initiative of organising a focus group for the development of new study programmes needs to be further strengthened by developing a concrete plan of activities, including expected outcomes, milestones, deliverables, and deadlines, as to ensure a timely and high-quality delivery of the new study programmes, taking into account professional, societal, and industrial needs and requirements.
- A higher frequency and longer duration of education- and research-related visits of teachers and students to and from reputable higher education institutions is advised as to ensure that the study programmes are well-aligned with international developments and standards.
- For each course, an explicit, detailed, and well explained alignment of the learning objectives, the intended learning outcomes, and the means of assessment, at the level of specific questions, is strongly advised to ensure fair and objective assessment of students' knowledge and skills and to demonstrate the achievement of the intended learning outcomes.
- For each course, detailed assessment rubrics for all means of assessment are advised as to ensure fair and objective assessment of students' knowledge and skills and to demonstrate the achievement of the intended learning outcomes.

- More feedback should be provided to the students concerning changes in courses and study programmes based on the student surveys and the results of student assessment.
- It is advised to improve the transparency of the mechanisms of influence of students on the study programmes.
- It is advised to strengthen the interaction with alumni and to involve them more in the process of revising the existing study programmes and developing new ones.
- It is advised that, based on the feedback from students and teachers, the Faculty conduct a more elaborate analysis of the distribution of ECTS credits between the fundamental courses provided in the first years of the undergraduate study programme and more specialized courses provided in the higher years of the undergraduate and graduate programmes.
- It is advised that the Faculty perform an analysis to verify the extent of consistency of ECTS allocation among different study programmes.
- It is important that the Faculty develop transparent mechanisms which would demonstrate how the feedback from students concerning the allocation of ECTS credits is taken into account.
- It is advised that the Faculty explicitly aligns student practices with the goals and the learning outcomes of the study programmes. The allocation of ECTS credits to student practices could be done based on this alignment.
- It is advised that the Faculty develops a clear procedure for the assessment of student practices, explicitly aligned with the intended learning outcomes.

Quality grade

Satisfactory level of quality

III. Teaching process and student support

Analysis

The Faculty provides student support for both domestic and foreign students. Although foreign students have a good support in English as well as available lectures and literature, the English language should be more widely used in the study programmes for domestic students. Grading of exams can also be improved by utilizing multiple examiners to rate exams independently and then discuss the findings to agree on a proper grade. The Faculty also needs to consider the causes of high drop-out rates seen in some study programmes and take measures to reduce them. The Faculty should consider the employability of their students when deciding on the enrolment quotas.

Recommendations for improvement

The Panel has the following recommendations:

- Analyse more deeply the causes of drop-out; implement appropriate measures to reduce the drop-out rate and provide evidence of their implementation and effectiveness.
- Align and adjust quotas for study programmes based on the employability data and potential employment opportunities.
- Provide classes taught in English for domestic students, rather than only foreign ones, including English samples of the examination process.
- Implement objective methods to quality assure grading by teachers (e.g. by having multiple independent assessments performed by two or more people).

Quality grade

Satisfactory Level of Quality

IV. Teaching and institutional capacities

Analysis

The Faculty possesses adequate and sustainable institutional capacities and mechanisms that enable a satisfactory level of quality of the study programme delivery and research. Teaching capacities are limited, posing a risk of impaired study quality. This is partially due to development coefficient-based employment restrictions in place at Croatia's HEIs. Teacher recruitment, advancement and re-appointment processes ensure the selection of the best candidates, although the objectivity of the processes can be improved. The Faculty encourages and invests in teachers' professional development and teacher workload ensures appropriate distribution of teaching and scientific activities, professional and personal development and administrative duties. The Faculty possesses various types of equipment. Most of it is up-to-date and in line with industry standards and, as such, appropriate for the delivery of study programmes and for conducting scientific and professional activities. The library services meet the needs of students and teachers related to teaching and learning, and partially, research. The management of financial resources is rational and forward-looking. The Panel supports Faculty plans for future investments in institutional capacities, including the equipment, the library, buildings, and airport renewal.

Recommendations for improvement

The Panel has the following recommendations:

- Increase teaching capacities and decrease the student-teacher ratio in order to improve the quality of teaching and ensure its sustainability.
- Increase the level of objectivity and transparency in the recruitment and advancement processes and the visibility of the Faculty.

- Continue the positive trend of supporting teachers' professional development.
- Continue the planning procedures and document preparation for future investments in institutional capacities and take advantage of various funding opportunities.
- Find a model of enabling access of teachers and researchers to the relevant scientific databases.
- Submit more international research project proposal and try to attract more research funding.

Quality grade

Satisfactory level of quality

V. Scientific/artistic activity

Analysis

Teachers and associates demonstrate an increasing trend of scientific publications and citations in well-recognized databases. However, the average number of high-quality publications is still very low as well as the number of citations. Very few examples of significant achievements at international conferences were provided by the Faculty.

The Faculty plans its research and professional activities by taking into account the needs of society and the labour market. There is an ongoing transfer of knowledge and technologies between the Faculty and industrial partners. However, the Faculty does not provide systematic support and adopt measures aimed at encouraging the development of innovation.

The Faculty partakes in an adequate number of professional and scientific projects. However, the Faculty's project roles are mainly related to its professional activities, thus significantly limiting its scientific output delivered in connection with these projects. Some relevant international recognition has been achieved.

The Faculty's Strategic Programme of Scientific Research for 2015-2020 is aligned with the vision of the development of the higher education institution. However, a detailed research implementation plan is missing as well as the description of strategies for achieving excellent scientific results and encouraging a successful technology and innovation transfer.

The Faculty continuously includes students at all study levels in scientific and professional activities coordinated by various research centres, departments and Faculty chairs. However, master/PhD students are often too focussed on professional aspects, demonstrating only average outcomes and very limited quality in their scientific activity.

Recommendations for improvement

The Panel has the following recommendations:

- Establish a more detailed strategic and organic programme and implementation plan regarding the development of excellent scientific research and international visibility for the 5-year period.
- Maximize the return on investment for the time that the teachers and associates spend in establishing and maintaining collaboration with partners from industry and public sector entities.
- Intensify collaboration with other national and, especially, international research institutions and dedicate more time, resources and funding to develop, publish and present high-impact scientific works.
- Focus on developing innovative scientific projects and involve more students in research activities, including offering additional opportunities to benefit from international experience and attend presentations by guest lecturers.

Quality grade

Minimum level of quality

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

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

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

Analysis

The Faculty's quality assurance system encompasses all of its activities, including the study programmes, the teaching process, student support, support for students in under-represented and vulnerable groups, learning resources, scientific/artistic activity, professional activity, etc. The documents in which the mentioned activities are described and analysed are available on the Faculty website.

The stakeholders of the Faculty, including the students and external stakeholders, actively participate in the internal quality assurance system through their involvement in the Quality Assurance Commission. Members of the Commission are, beside employees of the Faculty, student and alumni representatives. The Expert Panel noticed that student members were not involved in the study programme development.

The Faculty has established an internal quality assurance policy which is based on the implementation of a development strategy and comprises a scientific research agenda. The five-year Programme of Scientific Research includes some elements of Article 3 Paragraph 1 of the *Ordinance on conditions for issuing licence for scientific activity, conditions for re-accreditation of scientific organisations and content of licence*.

The Faculty performed an analysis of strengths, weaknesses, opportunities and threats (SWOT), based on which strategic goals were defined. The five-year Development Strategy includes the mission and the vision of the Faculty, its strategic goals, including respective measures and action plans, defined responsibilities for strategy implementation, and the plan for its realization.

The documentation presented and discussions conducted during the site visit as well as the data shown in the Self-Evaluation have confirmed that the Faculty collects and analyses data on its processes and results. The Faculty uses various methods for the collection of data on quality and includes different stakeholders in the data collection process (e.g. six different types of surveys are conducted). However, the Panel recommends a more active use of feedback aimed at improving the activities of the Faculty.

According to held meetings and data presented during the site visit, the Expert Panel concludes that the Faculty is committed to the development and implementation of human resource management policies.

Recommendations for improvement

The Panel has the following recommendations:

- It is recommended that the feedback from stakeholders and survey results are actively taken into account in order to effectively improve the Faculty's activity and ensure its further development.
- There are no records of notifications of non-conformance with the standards of quality made using the internal quality assurance system. It is recommended that the employees are encouraged to use the internal quality assurance system more actively, especially the option of standards of quality non-conformance notifications, so that the system can be used to support quality development.

Quality grade

Satisfactory level of quality

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

Analysis

According to the presented documentation and conducted discussions, the Faculty has analysed the deficiencies identified in previous evaluations and has undertaken activities for their improvement based on the respective recommendations. The activities undertaken based on the recommendations for improvement following the re-accreditation procedure conducted in 2012 were analysed in the Final Report on Addressing Deficiencies, issued in April 2015.

According to the Report, the Faculty provided more space for independent and group study activities, including a research laboratory with PCs; undergraduates were more actively engaged in research projects; the links with industry and alumni were strengthened in order to support technology transfer. Moreover, the new doctoral programme Transport has eliminated most of the deficiencies addressed in the recommendations of the Expert Panel following the re-accreditation process held in 2016, which focussed on PhD studies and research activity. The Faculty is making an effort to analyse the improvements and plan further development accordingly.

Although several activities have been initiated to increase the number of graduates of undergraduate studies, further measures should be adopted and implemented to increase the completion rates.

The Panel noted that participation of students and teaching assistants in international mobility programmes grew in the last five years. On the other hand, scientific and international mobility and cooperation of teachers and non-teaching staff is not at an appropriate level, although the Faculty has taken steps to encourage it.

Despite several adopted measures for the improvement of international visibility, the Faculty should take further steps to encourage its staff to publish more in peer-reviewed international journals, introduce courses in English to facilitate staff and student incoming mobility and enhance international collaboration at collaborative projects.

Recommendations for improvement

The Panel has the following recommendations:

- It is recommended that the Faculty continue the implementation of the recommendations for improvement from previous evaluations, in compliance with the adopted plans and procedures.
- It is recommended that international visibility is improved by motivating teachers to participate in mobility and international collaboration programmes and increasing international exchange opportunities for teaching and non-teaching staff.
- It is recommended that incentives are provided to teachers who publish in journals indexed in the Web of Science in order to improve the citation impact of the Faculty.

Quality grade

Satisfactory level of quality

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

Analysis

With respect to academic integrity and freedom, the Faculty implements a quality policy that stipulates the principles of moral and professional ethics. For the purpose of preventing unethical behaviour, intolerance and discrimination, in the academic year 2017/2018, the Faculty adopted the new Ethical Code as well as the Regulations on Disciplinary Responsibilities of Employees and Students, containing the procedures and measures to be implemented in case of the violation of the Ethical Code. The goal of the Code is to promote ethical behaviour to be adopted and valued by every member of the Faculty and it comprises rules of conduct and fundamental principles of professional ethics that should guide the actions of all the employees and students at the Faculty. The Code also stipulates the structure and activities of the Ethics Commission and respective procedures.

The Commission was established to monitor the compliance with the ethical principles and define disciplinary procedures in case of detected unethical behaviour, intolerance and discrimination. The Commission reaches decisions with respect to the complaints made by employees and students and conducts the procedure of determining the validity of accusations for unethical behaviour, thus ensuring the functionality of the system of conflict management and eliminating irregularities on all Faculty levels.

The Student Ombudsman appointed at the Faculty is a student whose job is to resolve any issues concerning students' academic relationships and rights as well as their freedoms.

During the academic year 2016/2017, the Ethics Commission processed and issued opinion with respect to three claims, while there was one report of unethical behaviour in the academic year 2017/2018.

The data presented in the Self-Evaluation and during on-site discussions show that teachers do not check bachelor, master or doctoral thesis using plagiarism detection tools. When submitting the thesis, the students must sign the Statement of Academic Honesty and a consent in which they agree that their paper is archived and published in the Dabar Digital Academic Archives Repositories. Nevertheless, the Panel finds that a plagiarism detection software tool should be made obligatory in order to prevent issues of academic dishonesty.

Recommendations for improvement

The Panel has the following recommendations:

- It is strongly recommended that the Faculty introduce a software-based plagiarism detection tool to be used in reviewing bachelor, master and doctoral thesis. The application of such a detection tool must be obligatory in order to avoid academic plagiarism. The use and implementation of such software, including the detection procedures and the amount of allowed text, should be defined by internal regulations. The results of the detection procedure must be analysed by teachers and the data on plagiarism should be available online.
- It is recommended that all the information concerning ethical issues should be made available on the Faculty website in both the Croatian and the English language.

Quality grade

Minimum 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 on the study programmes and other activities of the Faculty as well as all relevant documents are publicly available on the Faculty website. However, the website contains documents, learning outcomes and curricula only in the Croatian language. As per information obtained at the meetings during the site visit, all the documents should be available in the English language before the beginning of the summer semester, i.e. by March 2019.

The Faculty organizes various activities to inform the stakeholders about the study programmes, learning outcomes, admission criteria, enrolment quotas, qualifications and other indicators as well as about the social role of the Faculty. Some of those activities are: participation at the University of Zagreb Fair, visits to high schools in Zagreb and the surrounding area, the Open House Day, other similar activities and programmes. During the Open House Day, which is very well-attended, the Faculty presents all of its activities to high school students through lectures and visits to Faculty's laboratories.

In addition, the Faculty's organizational units hold various expert meetings and workshops dealing with traffic and transport challenges and project presentations to target groups.

Recommendations for improvement

The Panel has the following recommendations:

- It is recommended that all documents as well the information on study programmes, learning outcomes and curricula should be available on the Faculty website in the Croatian and the English language.

Quality grade

Satisfactory level of quality

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

Analysis

The analysed documentation, the information received at the meetings held during the site visit, as well as the data presented in the Self-Evaluation have all demonstrated that the Faculty contributes to the development of the economy and the local community. The meetings with alumni and business sector representatives were very well-

attended. At these meetings, it was confirmed that there is considerable collaboration on professional projects and in the implementation of PhD studies, which contributes to the national economy. Collaboration with the economy and industry has been strengthened as a result of the activities of the Economic Council, which includes representatives from the business sector. The Faculty also contributes to the local community development by implementing projects of traffic infrastructure improvement and increased traffic safety.

The Faculty has taken steps to increase the accountability of teachers for the development of the University and local community by engaging them in various decision-making activities of public interest and in social-impact work. In addition, the Faculty organises an annual scientific-professional meeting “Science and Traffic Development”, where the teachers participate in roundtable discussions, conference meetings, events and forums and promote various transport and traffic solutions.

The Panel noted that the Faculty collaborates closely with numerous international and national associations and federations.

Recommendations for improvement

The Panel has no recommendations for improvement.

Quality grade

High level of quality

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

Analysis

The lifelong learning programmes are delivered in the form of various conferences, workshops, events and summer schools. Development of such programmes is carried out at 3 departments. The Department of Aeronautics delivers training programmes compliant with the European Aviation Regulations for civilian pilots, air traffic controllers, flight instructors and instructors of flight control simulators. The programme delivered by the Department for Road Transport includes a training programme for road safety inspectors and leads to the acquisition of the licence of Certified Road Safety Inspector. Finally, the Department of Transport Logistics has organised several logistics and inventory warehousing and management training programmes for various target groups from different companies.

Based on the abovementioned, the Panel has concluded that the general goals of lifelong learning programmes are in line with social needs and with the mission and strategic goals of the Faculty.

The lifelong learning programmes are constantly analysed, revised and improved according to social needs and participant evaluations.

The Panel has examined the following documents and evidence examples: Regulations on Lifelong Learning, List of Lifelong Learning Programmes, Reports on Lifelong Learning Syllabi, certificates on completed programmes, lifelong programme evaluations based on participant satisfaction with the lifelong learning programmes.

Recommendations for improvement

The Panel has no recommendations for improvement.

Quality grade

High level of quality

II. Study programmes

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

Analysis

The general goals of all study programmes are well in line with the mission and strategic goals of the Faculty, which focus in particular on the development and delivery of high-quality undergraduate, graduate and postgraduate education.

The descriptions of all study programmes provide sufficient justification for their delivery. However, the analysis of resources necessary for the programme delivery is often limited or missing. Furthermore, this analysis does not elaborate on the allocation of qualified teaching staff, which should be carried out in accordance with the *Ordinance on the content of licence and conditions for issuing licence for performing higher education activity, carrying out a study programme and re-accreditation of higher education institutions*.

The Faculty delivers study programmes leading to degrees in regulated professions: military professions, civil pilots, and air traffic controllers. In delivering these programmes, the Faculty conforms to the requirements and recommendations of the respective professional organisations, such as EASA, ICAO, Croatian Military of Defence, and Croatian Air Navigation Service Provider.

The Faculty closely collaborates with various industrial and governmental organisations and many of the students become their employees after graduation. However, the unemployment numbers for some study programmes are still rather high,

e.g. for Traffic and Transport and Intelligent Transport Systems and Logistics programmes. An analysis needs to be performed to identify reasons for this.

Recommendations for improvement

The Panel has the following recommendations:

- A more detailed analysis of resources required for delivering each study programme needs to be performed.
- A better analysis of the unemployment statistics of the students graduated from the Faculty is required, especially for Traffic and Transport and Intelligent Transport Systems and Logistics programmes.

Quality grade

Satisfactory level of quality

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

Analysis

The learning outcomes of the study programmes are clearly described and aligned with the mission and goals of the Faculty. The learning outcomes of the study programmes are explicitly aligned with the specific learning outcomes of individual courses in specifically designed tables. Furthermore, the Faculty has recently established a focus group with a view to improving the study programmes and achieving a higher level of alignment with the requirements of the Croatian Qualification Framework and the European Qualifications Framework as well as with current and future societal and industrial requirements and needs. At the time of writing of this report, this group has taken initial exploratory steps, surveying various stakeholders and analysing study programmes of other higher education institutions with the aim to identify necessary changes to the existing study programs. The Panel believes that this initiative is valuable and necessary for the improvement of the study programmes; however, the activities of this group must be more carefully planned and structured with respect to the intended outcomes, milestones, deliverables and deadlines.

The Faculty staff maintains good connections with many industrial and professional organizations, which are members of the Faculty's Economic Council. Recommendations made by this advisory body are taken into account in the improvement of the study programmes and individual courses delivered by the Faculty. Specifically, the Aeronautics Department, together with Croatian Air Navigation Service Provider, are currently developing a procedure for pre-selection of applicants for the

air traffic control specialisation so that their skills are more aligned with the professional requirements in the ATM/ATC area.

Although the Faculty has provided some evidence of the mobility of both teachers and students, a higher frequency and a longer duration of education- and research-related visits would allow for a better alignment of the new study programme with internationally recognized professional standards and requirements.

Recommendations for improvement

The Panel has the following recommendations:

- The positive initiative of launching a focus group for the development of new study programmes needs to be further strengthened by creating a concrete plan of activities, which will include expected outcomes, milestones, deliverables and deadlines, so as to ensure a timely and high-quality delivery of the new study programmes, taking into account professional, societal, and industrial needs and requirements.
- A higher frequency and longer duration of education- and research-related visits of teachers and students to and from reputable higher education institutions is advised as to ensure that the study programmes are well-aligned with international developments and standards.
- Further development of the pre-selection procedure for the students applying for the air traffic control specialization is needed.

Quality grade

Satisfactory level of quality

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

Analysis

The Faculty and the University administer student surveys to collect feedback on the teachers and the courses. The student feedback is communicated to the teachers. The teachers then update their courses as well as teaching and assessment methods based on the feedback, as they deem appropriate. The Faculty has developed procedures for improving teaching quality in case of a negative evaluation of a teacher or a course. Students rarely get feedback from their teachers on how the courses were improved based on their feedback.

The provided samples of exams, tests, and seminar papers did not demonstrate a clear connection with the learning objectives and the intended learning outcomes of the respective courses, and whether or not these objectives and outcomes were achieved.

Furthermore, the assessment rubrics and the criteria for the written and oral exams were not clear.

Although students felt that they lacked practical knowledge and that their studies missed a practical orientation necessary for their future employment, alumni stated that the knowledge and skills gained at the Faculty were useful and sufficient as a necessary basis for performing their current jobs.

Recommendations for improvement

The Panel has the following recommendations:

- For each course, demonstrating an explicit, detailed, and well-explained link between the learning objectives, the intended learning outcomes, and the means of assessment, at the level of specific questions, is strongly advised as to ensure fair and objective assessment of students' knowledge and skill, and to demonstrate the achievement of the intended learning outcomes.
- For each course, detailed assessment rubrics for all means of assessment are advised as to ensure fair and objective assessment of students' knowledge and skills, and to demonstrate the achievement of the intended learning outcomes.
- More feedback should be provided to the students concerning changes in courses and study programmes based on the student surveys and the results of student assessment.

Quality grade

Minimum level of quality

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

Analysis

The Faculty provided strong evidence on the impact of various stakeholders on the Faculty's educational provision. In particular, the Economic Council, which comprises representatives of different companies and governmental organizations, meets with the Faculty representatives several times a year and discusses the ways in which the current and future needs of industry and society could be addressed in the existing and new study programmes delivered by the Faculty. At some of these companies, Faculty's alumni help in maintaining links with the Faculty. However, the Panel felt that the involvement of alumni and their influence on the study programmes could be greater.

The teaching staff has sufficient opportunities to influence the study programmes. However, mechanisms of students' impact on the study programme provision are not always clear.

At the University there are no similar programmes to the ones delivered by the Faculty.

The Faculty publishes up-to-date versions of the study programmes every year.

The Faculty records the changes to the study programmes and provides motivation for these changes.

Procedures for proposing and justifying introduction of new study programmes are in place. The Faculty is currently developing new study programmes to address the requirements of the Croatian Qualification Framework as well as meet the existing and future societal and industrial needs.

Recommendations for improvement

The Panel has the following recommendations:

- It is advised to improve the transparency of mechanisms of the students' influence on the study programmes.
- It is advised to strengthen the interaction with the alumni and to involve them more in the processes of revising the existing study programmes and developing new ones.

Quality grade

Satisfactory level of quality

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

Analysis

Distribution of ECTS credits among different teaching activities is indicated in the description of study programmes and individual courses. The Faculty conducts student surveys to collect feedback on the appropriateness of ECTS allocation. The Faculty keeps record of any changes to ECTS allocation, with corresponding justifications.

However, students perceived that the distribution of ECTS credits was not well-balanced. In particular, they commented on an imbalance in the number of ECTS credits allocated to more general, fundamental undergraduate courses and more specialized undergraduate and graduate courses. Furthermore, students indicated that there were some inconsistencies in ECTS allocation among different specializations. For example, the study programme in Aeronautics was perceived by the students as very dense, with the number of allocated ECTS credits not fairly reflecting the actual workload. In particular, in case of the English Aeronautical Language course, only 1 ECTS credit was allocated in a semester, which was perceived as insufficient, even by the teaching staff.

Recommendations for improvement

The Panel has the following recommendations:

- It is advised that the Faculty, based on the feedback from students and teachers, conduct a more elaborated analysis of the distribution of ECTS credits between the fundamental courses delivered in the first years of the undergraduate study programme and the more specialized courses delivered in the final years of the undergraduate and graduate programmes.
- It is advised that the Faculty perform an analysis to verify the extent of consistency of ECTS allocation among different study programmes.
- It is important that the Faculty develops transparent mechanisms which would demonstrate how the feedback from students concerning the allocation of ECTS credits is taken into account.

Quality grade

Minimum level of quality

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

Analysis

All students are obliged to complete 25 days of practical work, preferably outside of the University (e.g., at an industrial or a governmental organisation) by the end of their undergraduate studies. The Faculty facilitates placement of students and provides recommendation letters. There were a few mentions of students having some difficulties arranging their practice, but all of them were eventually resolved. The Faculty's strong links with industry are very helpful in arranging student practices. Although both students and teachers recognized the added value of student practices in the academic and professional training of the students, some students and teachers suggested that the student practice should be a part of graduate studies, rather than undergraduate studies. It was argued that undergraduate students have a high study workload and still lack competences to be readily applied in addressing industrial and societal challenges outside the University.

Another issue is that there are currently no ECTS credits associated with student practices, and thus, no information on the workload expected from the students. The type and the level of difficulty of the tasks performed by the students during their practices vary significantly. Furthermore, no explicit alignment between the tasks performed by the students during their practices and the intended learning outcomes of the study programmes that they are enrolled in was identified. Moreover, clear procedures for the assessment of student practices based on the respective goals and learning outcomes of the study programme were missing.

Recommendations for improvement

The Panel has the following recommendations:

- It is advised that the Faculty explicitly align student practices with the goals and the learning outcomes of the study programmes. The allocation of ECTS credits to student practices could be done based on this alignment.
- It is advised that the Faculty develop a clear procedure for the assessment of student practices, which is explicitly aligned with the intended learning outcomes.
- The Faculty may consider moving student practices from undergraduate studies to graduate studies.

Quality grade

Satisfactory 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

Clear admission criteria for both undergraduate and graduate study programmes are published on the Faculty website, which is easily accessible. The same information is also available on the “Postani student” portal (the official national portal for the admission to higher education institutions). Enrolment procedures for both undergraduate and graduate studies are regulated by the Regulations on pre-diploma and diploma studies at the University of Zagreb. The criteria are predefined, consistent and well-known. The admission criteria for enrolment to graduate study programmes is based on students’ success at the undergraduate studies.

The analysis of student performance and the drop-out rate in the first year of undergraduate studies clearly shows that the admission criteria are not strict enough. More stringent admission criteria would result in the selection of more suitable candidates, with better prior knowledge, which would possibly lead to a reduced drop-out rate.

Currently, the recognition of previous education achievements is based on teacher assessment made on a case-to-case basis. Nevertheless, students are satisfied with that kind of procedure and they did not express any complaints.

Recommendations for improvement

The Panel has the following recommendations:

- The Faculty may benefit from examining the ways in which admission criteria are used and admissions managed at other HEIs.
- The Faculty should consider introducing stricter admission criteria.

Quality grade

Minimum level of quality

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

Analysis

The drop-out rates have been as high as 66%, which is considered extremely high. The Faculty's analyses of the drop-out data by departments have shown that specific subjects, such as Mathematics and Mechanics, could be considered a part of the reason for lower student performance. Additionally, part-time students show higher drop-out rates due to their limited availability, since part-time students often work alongside studying and therefore sometimes fail to cope with the study commitments.

The Faculty monitors student progress, analysing it and creating statistical data. Part of the data is collected and analysed by the University of Zagreb. The procedure is regulated by the quality assurance manual of the University of Zagreb as well as the internal ordinances of the Faculty. The Faculty itself conducts the analysis of the success rates at exams for all of the courses in all of the study programmes.

The data on student performance and pass rates is regularly analysed and made available. Despite an average level of pass rates, drop-out rates are still high. The Faculty should analyse high drop-out rates more systematically. Clear measures aimed at tackling the issue are not in place, which is considered a major deficiency. It was noted that one of the reasons for high drop-out rates is simply a lack of genuine motivation to study among some students, which was confirmed by the students during a meeting.

Recommendations for improvement

The Panel has the following recommendations:

- Continue systematically collecting and analysing data on student performance and drop-out rates.
- Conduct in-depth analyses of drop-out rates and implement tangible and appropriate measures to reduce it.

- Formally ensure and encourage students to participate in the monitoring of student performance and drop-out rates.
- Systematically collect feedback on the reasons for drop-out, whenever possible.

Quality grade

Minimum level of quality

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

Analysis

The Faculty accepts Erasmus students and has a high number of incoming students. Erasmus students are satisfied with the availability of information in the English language (everything is available on a special webpage in the English language). Domestic students noted that lectures in English language should be made available to them as well, at least in some subjects.

The Ordinance on Studying at the Faculty of Transport and Traffic Sciences in Zagreb is available on the Faculty website, and it is the reference document for other student-related regulations.

Various teaching methods are used, such as group projects, cooperative learning, problem-based learning, field work, student practises or simulator training. Students also use e-learning portals, such as the Merlin system (on which students can find online lectures and other course information). Sufficient simulators are available for student training in different study programmes. Autonomy of student work is encouraged by requiring students to prepare seminar papers and case studies and partake in individual project work.

It is clear that the programme delivery and teaching methods are well-adjusted for vulnerable groups of students and students with special needs.

In order to collect student feedback on the modes of programme delivery, teaching methods and general satisfaction with teachers and lectures, a voluntary anonymous survey is conducted at the end of each semester.

Recommendations for improvement

The Panel has the following recommendations:

- Introduce peer review in the teaching process.
- Consider introducing mandatory student evaluations (i.e. using electronic means).
- Introduce methods aimed at promoting creative and critical thinking as well as other forms of personal development, such as joint work with teachers, student projects, student company incubators, etc.

- Introduce regular and mandatory use of the English language in the teaching process.

Quality grade

High Level of Quality

3.4. The higher education institution ensures adequate student support.

Analysis

The Faculty provides guidance on studying and career opportunities in the form of both formal and informal procedures. Discussions with Faculty members and students confirmed that there is a formally available teacher tutor system and that the Faculty is planning to establish the Office for Student Practice and Career Development. The Faculty has organised the Career Day, during which information on potential employment opportunities were offered to students, but students share the opinion that the Career Day should become an annual event at the Faculty and that it should be organised on a higher level.

An office for psychological and legal counselling of students has been established at the university level.

Students receive student-related information at the beginning of their study programme, but there is no written guide. Working hours of the library and the student administration service are adequate.

There is good support for diverse student populations (under-represented). General support for incoming and outgoing mobility is appropriate; information for Erasmus students is easily available in English.

Several student groups/organisations operate at the Faculty. The Faculty provides them with financial support by sponsoring activities and student projects. In addition, some Faculty premises have been allocated to student organisations.

Recommendations for improvement

The Panel has the following recommendations:

- Provide all students with thorough written bilingual information at the beginning of their study programme, including general information and information on student support services at the university and Faculty levels (i.e. individual guide book).
- Create an annual career day event at the Faculty, hosting companies from the relevant fields.

Quality grade

Satisfactory Level of Quality

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

Analysis

The Faculty does not formally monitor the needs of students from vulnerable and under-represented groups, but is absolutely ready to support them with respect to any potential issues.

The Faculty organises the educational process and other activities for all groups of students, but the teaching process can be specifically adjusted to meet the needs of special groups of students, if such measures are needed.

The Infrastructure of the Faculty will be better adjusted for students with disabilities when the Faculty moves into one building.

Recommendations for improvement

The Panel has the following recommendations:

- Ensure keeping data in accordance with the Personal Data Protection Act on vulnerable and under-represented groups of students to enable better support.
- Consider providing one (or more) scholarship at the Faculty level for one (or more) student from a vulnerable and under-represented group.

Quality grade

Satisfactory Level of Quality

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

Analysis

Students are informed of the opportunities for studying abroad and there is good support for applying to student exchange programmes. The most common exchange programme is Erasmus, facilitating exchange within the EU. The number of students participating in mobility programmes is continuously growing.

ECTS credits gained at another higher education institution are recognised based on the comparison of respective learning outcomes. Students are satisfied with that procedure. The Faculty formally collects information on student satisfaction with the support for student mobility.

The Faculty is working on increasing the number of contracts and agreements with other foreign HEIs following students' opinion.

Recommendations for improvement

The Panel has no recommendations for improvement.

Quality grade

High Level of Quality

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

Analysis

The Faculty does provide support to foreign students in the process of enrolment and studying. Information for foreign students is available in the English language on the Faculty website. Courses are delivered in English in the form of consultative classes. As a result, when it comes to lectures, foreign students are separated from domestic ones. Croatian language courses are delivered to foreign students at the university level.

Formal feedback on the satisfaction and needs of foreign students is collected and analysed and the measures for improvement systematically taken.

The number of incoming mobile students is growing by year as well as the number of contracts and agreements signed with foreign institutions.

The ECTS Coordinator is appointed at the Faculty level, providing support to foreign students; the Office for International Cooperation is established and functional.

Generally, foreign students are satisfied with the overall conditions and support offered.

Recommendations for improvement

The Panel has the following recommendations:

- Add specific information of interest to foreign students (including social and general information) to the existing website.
- Improve certain classes as to enable mixed attendance of foreign and domestic students.

Quality grade

High Level of Quality

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

Analysis

The criteria and methods of evaluation and assessment are clearly defined, aligned with the teaching methods used and published for each specific course.

There is support given to the evaluators in the development of assessment skills, but the support should be improved and provided continuously. The Faculty has a functioning student appeal procedure (examples were seen).

The Faculty does not have procedures for the evaluation of assessment. The Faculty does not make use of double marking and external evaluators, and tests are not anonymous. However, students do not find the assessment procedure inconsistent or lacking in objectivity. In addition, the Faculty has implemented various methods, tools and procedures that support assessment consistency, such as clearly written indication and awarded points for each examination task; students have the right to see their written exams and discuss them with the teacher as well as to express dissatisfaction with the grade using a standard form, ask for the exclusion of a certain professor from the student's further examination; oral exams are public and anyone can attend; examination for the bachelor and master thesis is performed in front of a committee.

Recommendations for improvement

The Panel has the following recommendations:

- Provide better support to teachers in the development of skills related to the evaluation and assessment methods.
- Implement objective methods to quality assure grading by teachers (e.g. by having multiple independent assessments performed by two or more teachers).
- Achieve a minimum standard level for each course, where appropriate.
- Introduce methods of anonymous examination, ensuring that student names are not visible in the evaluation of exams.
- Introduce a system of using external examiners/committee members for bachelor and master thesis.

Quality grade

Minimum Level of Quality

3.9. The higher education institution issues diplomas and Diploma Supplements in accordance with the relevant regulations.

Analysis

Both diploma and Diploma Supplement are issued to the student upon completion of studies. Both documents comply with the relevant national regulations and specify the awarded qualification and achieved learning outcomes as well as the level, content and status of the study programme.

Students and alumni have a positive experience of the form and content of the diploma. Also, additional information provided in the Diploma Supplement has been recognised by the employers.

Recommendations for improvement

The Panel has no recommendations for improvement.

Quality grade

High Level of Quality

3.10. The higher education institution is committed to the employability of graduates.

Analysis

According to the official data, employability rate of students is around 50%. In some study programmes, student opportunities for employment are considered to be lower than average. In connection with that, enrolment quotas are not aligned with social and labour market requirements and available resources.

Although the institution recognises the importance of student employability, there is no formal and systematic approach to the analyses of the employability of graduates.

For some study programmes students confirmed a lack of employment opportunities and they urged the institution to undertake additional efforts to connect students with potential employers.

The Alumni Association has been established with a view to tackling employability of graduates. There is no formal database containing contact information of alumni and industry stakeholders.

Recommendations for improvement

The Panel has the following recommendations:

- Systematically analyse employability of graduates.

- Align and adjust enrolment quotas based on the employability data and potential employment opportunities.
- Establish a procedure for collecting and analysing feedback from alumni and industry stakeholders.

Quality grade

Minimum Level of Quality

IV. Teaching and institutional capacities

4.1. The higher education institution ensures adequate teaching capacities.

Analysis

The Faculty currently employs 18 full professors, 15 associate professors, 21 assistant professors, 19 postdoctoral researchers, 16 teaching grades, 22 assistants and 7 employees on various projects. The Faculty fulfils the minimum requirement prescribed by the *Ordinance on conditions for issuing licence for scientific activity, conditions for re-accreditation of scientific organisations and content of licence* of having at least 15 full-time employed scientists, with at least 5 in the scientific area in which they carry out their scientific activity. However, with respect to the *Ordinance on the content of licence and conditions for issuing licence for performing higher education activity, carrying out a study programme and re-accreditation of higher education institutions*, the Faculty does not meet the requirement of carrying out of at least one half of the overall number of working hours of a proposed study programme by full-time employees appointed into a scientific-teaching grade. All three undergraduate study programmes have a ratio that is lower than the prescribed one (Traffic – 0.43, Intelligent Transport Systems and Logistics – 0.47, and Aeronautics – 0.36) as well as one graduate study programme (Aeronautics – 0.35).

For the undergraduate studies, the main reason behind this is that the lectures are conducted by professors and exercises by assistants or lecturers. In order to keep an adequate level of quality, exercises should be conducted in groups of a maximum 20 students. However, several courses, especially in the first year of Traffic undergraduate study programme, have a huge number of students, exceeding the limit of 20 students per group. It should be noted that there are several elective courses held by external associates included in the statistics, despite the fact that they have not been conducted due to low interest of students. Furthermore, the Aeronautics study programme is very specific, enrolls a much smaller number of students than the other programmes and its execution involves special circumstances and particular requirements. Due to a low number of students, specialised courses are conducted by external associates in

collaboration with the external stakeholders (e.g. the Croatian Military Academy). Special circumstances are particularly noticeable in case of the pilot training programme. Certain courses within the programme, such as the flying courses, involve much more exercises than lectures, and these are conducted by flying instructions, that generally do not have a scientific-teaching grade. Certain exercises have to be carried out one-on-one, which also dramatically affects the number of working hours covered by associates. An example of particular requirements refers to the fact that the Aeronautics studies include a Military Pilot programme concentration, preparing students for the regulated profession of Military Pilot of Airplanes and Helicopters, and is therefore conducted in collaboration with the Croatian Ministry of Defence.

Teacher recruitment policy is limited due to the job coefficient system, which consequently restricts the total number of teaching staff at each HEI. Although the number of teachers with a scientific-teaching grade for some studies is not aligned with national regulations, the Panel has been persuaded, based on the aforementioned facts, that the Faculty ensures adequate conditions and meets quality standards for the study programme delivery. Furthermore, the management of the Faculty is aware of the issue and has already taken some steps to improve the number of teachers with teaching-scientific grade and reduce the student-teacher ratio. Currently, 19 postdoctoral researchers are employed at the Faculty, and the management plans to advance one third of them in the near future into the scientific-teaching position of assistant professor. To achieve that goal, they introduced Personnel Improvement Policy for post-doc researchers, which supports them in reaching the assistant professor title by allowing them to carry out 87.5% of the workload while receiving a full salary (the remaining 12.5% is covered by the Faculty). Furthermore, the Faculty applied to a call for funding of quality development in HE in accordance with the Croatian Qualifications Framework with a plan to create new undergraduate study programmes in collaboration with industry, where new teaching ratios are still unknown.

The student-teacher ratio at the Faculty is high, but within acceptable limits (31.34 for full-time teachers with a scientific-teaching rank; 24.90 for teaching grades included; 16.23 for teaching associates included). However, with such a high ratio, it is very difficult to ensure a high quality of study, education and research. Teacher workload is equally distributed among teachers and associates and it is in line with all of the relevant legislation and policies. Although some outliers were identified, the Faculty's management explained the specific circumstances and provided justifications. Each academic year, a plan for the assignment of teaching workload and the appointment of course leaders is proposed at the chair level, taking into account teacher qualifications, experience, research interests and duties. The whole procedure is documented and transparent and has to be approved by the Faculty Council. To ensure continuity and quality of teacher qualifications, PhD students must propose and prepare material for at least one course during their studies, which they are likely to take over if they get

selected for the permanent position. According to the feedback from teachers, workload assignment ensures an appropriate distribution of teaching and scientific activities, professional and personal development and administrative duties.

Recommendations for improvement

The Panel has the following recommendations:

- Increase teaching capacities and decrease the student-teacher ratio in order to improve the quality of teaching and ensure its sustainability. The new policy aimed at supporting the advancement of post-doc researchers into part-time assistant professors is endorsed by the Panel.
- Furthermore, the Faculty should take into special consideration teaching capacities while developing new undergraduate study programmes.

Quality grade

Minimum level of quality

4.2. Teacher recruitment, advancement and re-appointment is based on objective and transparent procedures which include the evaluation of excellence.

Analysis

Teacher recruitment, advancement and re-appointment is carried out in accordance with the development goals of the Faculty, defined in the Faculty Development Strategy 2018-2023 as well as the teacher retirement plan, and current and future teaching demands of study programmes. The procedures are transparent, aligned with the relevant legislation and defined in detail in the internal document *Regulations on the conditions and procedure of naming teachers to scientific, scientific-teaching, teaching and associate ranks in technical sciences in the field of traffic and transport technology*. The document incorporates the minimum requirements prescribed by the Ministry and the University, while including additional competitive criteria to award excellence. Although vacancies are adequately advertised both nationally and internationally, the number of applicants is usually small.

The Committee for Scientific and Teaching Development was formed to manage the development of the teaching and scientific potential at the Faculty. Each academic year, an internal call is published, inviting the teachers to express interest in applying for a higher scientific-teaching rank. The call is accompanied by a detailed self-assessment questionnaire, which includes an exhaustive set of indicators of excellence in scientific, teaching and professional fields, such as high-impact publications, supervision of final and graduation theses, international mobility, authorship of textbooks and study materials, guest lectures, and project leadership and participation. The questionnaire

also contains self-assessment of the candidate's contribution to the work and development of the Faculty. After receiving the expressions of interest, the Committee prepares the documentation and the initial promotion proposal to be considered by the Dean's Council and the department heads. The best candidates are selected and the final proposal made and submitted to the Faculty Council for approval. The recruitment and advancement process is competitive, transparent and balanced in terms of including all of the relevant parties. However, it does not include weighted factors and a scoring system, making the decisions potentially open to interpretation and subjectivity. However, according to the feedback by the heads of departments and teachers, the advancement procedure ensures the selection of the best candidates in accordance with the Faculty's strategy and needs; the advancements are fairly distributed among departments and there have been no complaints from the teachers who were not selected for advancement, but were instead re-appointed to the same position.

The teacher recruitment and advancement policy is limited due to development coefficient-based employment system in place, which restricts the total number of teaching staff at HEIs. However, a good practice example implemented at the Faculty is the advancement of post-doc researchers into a part-time position of assistant professors who carry 87.5% of the workload and receive a full salary, with the remaining 12.5% of the salary being secured from the Faculty's own funds. This helps retain researchers by supporting their advancement, consequently leading to an improved number of teachers with a scientific-teaching rank. Another example of good practice refers to the Faculty's effort to approach renowned experts from the industry and offer them the positions of external associates in specific courses.

Recommendations for improvement

The Panel has the following recommendations:

- Increase the level of objectivity and transparency of the recruitment and advancement processes.
- Increase the visibility of the Faculty and try to attract more candidates for advertised vacancies.

Quality grade

Satisfactory level of quality

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

Analysis

The Faculty provides numerous opportunities for professional development of teachers and associates in the form of roundtable discussions, training programmes, workshops and lectures aimed at advancing teaching competences, improving the quality of scientific work, developing mentoring skills of doctoral mentors as well as computer skills and foreign language competences. The Faculty regularly informs the employees and students of such events and encourages teacher participation by making some of them a requirement for advancement. The evidence of professional development is available via the Merlin system. Furthermore, some teachers are obliged to partake in certified training programmes, e.g. for pilots and air traffic controllers at the Aeronautics studies.

The Faculty encourages assessment of teaching competences by organizing student satisfaction surveys every three years. Based on the results, the teachers who receive the lowest grades must revise their course under supervision and possibly attend additional education to improve their teaching competences and presentation skills. In such cases, surveys are repeated in order to validate the applied measures. Each teacher has opportunity to submit personal professional development plan before the beginning of the next academic year. Based on the Faculty's financial plan, the Management decides to accept, postpone or reject the proposed plans. One good practice example is rewarding researchers under the PROM-PRIMA programme for completing major scientific-research projects. All request for sabbatical leaves have been approved and currently several teachers are using it. However, heads of departments see this as a problem in the current situation of insufficient teaching capacities.

Teachers participate in international mobility programmes, projects and networks. The most widely used are the Erasmus+ and CEEPUS programmes. In order to support student and teacher mobility, the Committee and the Office for International Cooperation have been established. Finally, a good practice example is the allocation of initial funds for attending conferences and education programmes to each teacher and associate at the beginning of each academic year.

Recommendations for improvement

The Panel has the following recommendations:

- The number of organized roundtable discussions, training programmes, workshops and lectures was very high between 2011 and 2015, but it has been decreasing since. The improvement in this number is therefore recommended over the next period.

- Although the number of outgoing and incoming mobilities is sufficient, the number of research mobilities should be higher, especially of young researchers and for longer periods of stay.

Quality grade

Satisfactory level of quality

4.4. 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 uses various equipment and software programmes in teaching and training processes, such as aircrafts, cars and a railway model, flight and flight control simulators, and various testing and computer equipment. Most equipment is up-to-date and in line with industry standards, and, as such, fully appropriate for the delivery of study programmes and for conducting scientific and professional activities. The majority of the equipment was funded from the Faculty's own sources. One of the strategic measures defined in the Faculty's development strategy is to constantly update the equipment and establish new specialized laboratories in order to improve the quality of teaching and research output. Although some students complained that the Faculty's aircrafts were old, outdated and often out-of-use for maintenance reasons, all relevant stakeholders and the Management, as well as the Panel members, have confirmed that they are adequate for the basic education of students and civil pilot training. Military students train in aircrafts owned by the Ministry of Defence. Military stakeholders confirmed that their quality is also adequate. Since the Aeronautics studies were launched (more than 20 years ago) no accident has been recorded. The Faculty has its own maintenance centre, which implements a maintenance schedule in accordance with relevant standards.

Although the Faculty's development strategy identifies the fact that the Faculty carries out its activities on multiple locations as one of its main weaknesses, students and teachers do not seem to experience any organizational or logistical issues due to this fact, since teaching is very well organized and mostly concentrated at one location during the semester. Furthermore, the facilities and the supporting infrastructure are more than adequate for teaching and research activities. No complaints regarding the facilities were made by the teaching staff or the Management during the Panel visit. However, one of the Faculty's strategic goals is to move to a single location and build a new building or expand the existing buildings on the scientific-teaching campus

Borongaj. To achieve this goal, the Faculty has completed the construction and legal planning procedure for a new building on the Borongaj campus. Furthermore, the Faculty also plans to build a new runway at the Lučko airport, which would significantly improve conditions for the flying training of new pilots within the Aeronautics studies.

Recommendations for improvement

The Panel has the following recommendations:

- The Panel supports the Faculty's decision and the strategic goal to move to a single location and build a new runway at the airport and encourages the Faculty to continue with the planning process and document preparation and to apply for various funding opportunities.
- Since Aeronautics is a specialized study programme that includes flying activities, it is strongly recommended that the Faculty should constantly and systematically work on improving the flying training conditions, including aircraft quality and safety.

Quality grade

Satisfactory level of quality

4.5. 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 services meet the needs of students and teachers related to teaching and learning, and partially to research. The literature catalogue with teaching material availability information is accessible online; library working hours are adjusted to students' needs; and the teaching literature quality is adequate, as confirmed by both teachers and students. The number of copies of literature for certain courses is limited. However, students believe that the issue is not the number of copies, but irresponsible behaviour of some students, who do not return the borrowed books on time. The library staff is very supportive of students and teachers in searching for literature. A good practice example is the inter-library cooperation in place on the national and European level. The library facilities and resources are mainly adequate, but the reading room is merged with the library. Therefore, the Faculty plans to relocate the library into larger and more adequate space. Financial means have already been secured for this purpose. Library computers are not equipped with all of the teaching software used in the laboratories, but students can access the laboratories when there is no teaching performed there. The annual budget for literature procurement is sufficient for the teaching literature, but limited for research literature, since there are

no available appropriate scientific databases. The Panel is aware of the fact that the limited availability of scientific databases is an issue that goes beyond the impact of the Faculty and that it must be solved with a help from the University and national bodies.

Recommendations for improvement

The Panel has the following recommendations:

- In order to enable teachers and researchers to produce high quality research work, it is advised to invest more funds in enabling access to the relevant scientific databases.
- Regarding the existing library resources, the Panel supports the Faculty's decision to relocate the Library to a new, more adequate location, with a separate reading room.
- Furthermore, it is necessary to implement mechanisms, procedures and measures to tackle the issue of students who are repeatedly late with book returns.

Quality grade

Satisfactory level of quality

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

Analysis

The gross profit/loss ratio has gone from negative to positive in the last five years, showing that the Management recognized financial issues and flaws and took responsibility and reasonable efforts to manage and tackle key issues and developing an efficient and sustainable financial policy. The Faculty's income consists of contributions from various sources (the state budget, projects, industry collaborations and scholarships). A good practice example is a significant share of funds that is secured from professional projects conducted in cooperation with industry, public institutions and local community. However, the total funds received from scientific projects are low compared to those awarded for professional projects, and these should be significantly improved. The Faculty has introduced regulations and procedures to improve the efficiency and transparency of financial management. Furthermore, an additional source of funding refers to new initiatives that encourage innovation in research, conference attendance and procurement of new equipment with a view to improve institutional and staff capacities. The three-year financial plan is sustainable and it ensures a rational distribution of funds.

Recommendations for improvement

The Panel has the following recommendations:

- Establish effective methods and procedures to attract more research funding.

Quality grade

Satisfactory level of quality

V. Scientific/artistic activity

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

Analysis

Teachers and associates demonstrate a positive trend in scientific publications (e.g. from 17 publications in 2012 to 26 publications in 2017 in Web of Science) and citations in well-recognized databases (e.g. from 25 citations in 2012 to 80 citations in 2017 in the Web of Science). However, the average number of high-quality publications is very low compared to the number prescribed by the ordinance on the appointment to scientific ranks (i.e. 0.4 publications per teacher in one year). Furthermore, the scientific papers are often published in low-quality journals and receive a very small number of citations.

The Faculty has recently adopted strategies to promote high-quality scientific publications by revising the format of the doctoral programmes, the assessment of scientific output of teachers, and the distribution of research funding. However, the progress is difficult to quantify at this early stage of the revision process and detailed information on the implementation of the research strategy was not provided.

Teachers and associates actively communicate their scientific and professional research findings to various stakeholders and disseminate results at national and international conferences. However, very few examples of significant international achievements were provided.

Some PhD theses contribute to the Faculty's research output. However, the average quality level of PhD theses is low and very few of them are associated with high-impact publications, research achievements, and citations in relevant databases.

Recommendations for improvement

The Panel has the following recommendations:

- The Panel members encourage the Faculty to establish a more detailed strategic and organic programme and implementation plan for scientific research development to be implemented over the next 5 years.
- All teachers and associates should be assessed based on their scientific productivity and incentives should be provided to increase scientific productivity.

- The Faculty should provide more support to its staff to increase international visibility, e.g. by inviting guest lecturers from established institutions, prioritize the exchange of researchers, establish funding for international mobility.

Quality grade

Minimum level of quality

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

Analysis

The teachers and associates regularly meet with various industrial partners and participate in numerous professional activities. The Faculty plans its research and professional activities by taking into account the needs of society and the labour market. Evidence was provided in the form of numerous ongoing scientific and professional projects and workshops with industrial partners and public sector entities. The transfer of knowledge and technologies between the Faculty and industrial partners is ongoing. However, the Faculty does not provide systematic support for, and has not adopted measures to foster, the development of start-ups and spin-offs and participation in the activities related to business incubators. Furthermore, very few examples of patents and professional publications were provided.

Recommendations for improvement

The Panel has the following recommendations:

- The Panel members encourage the Faculty to maximize the return on investment (in terms of innovations, patents, spin-offs, start-ups, scientific and professional publications) of the time spent by their teachers and associates in establishing and maintaining collaboration with industrial partners and public sector entities.

Quality grade

Satisfactory level of quality

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

Analysis

Researchers at the Faculty have achieved some recognition for their scientific and professional activities. However, most of it is limited to the regional or national levels, while little relevant international recognition has been achieved.

The Faculty partakes in an adequate number of professional and scientific projects. However, the role and participation of the Faculty is mainly related to the professional activities, thus significantly limiting the visibility of the HEI and its scientific output delivered in connection with these projects. Limited evidence was provided regarding invitations for the staff to present at relevant national and international events.

Teachers and associates are members of boards of conferences and scientific journals. However, very few examples were provided of the membership in scientific boards of well-established international conferences and in editorial boards of high-impact international scientific journals in the field of Transportation and Traffic Science.

Recommendations for improvement

The Panel has the following recommendations:

- The Panel members encourage the Faculty to make more effort to increase the international visibility of the researchers. This can be achieved by intensifying collaboration with other national and, especially, international research institutions; attending and presenting at well-established international conferences; and dedicating more time, resources and funding to developing and publishing high-impact scientific works.

Quality grade

Minimum level of quality

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

Analysis

The Strategic Programme of Scientific Research at the HEI for 2015-2020 is aligned with the vision for the Faculty's development. The Faculty has recently established 19 laboratories for scientific, professional and teaching activities, covering various fields of transportation and traffic science, including road, air and water transportation and traffic, intelligent transportation systems, and logistics. However, the action plan report is provided only at a very high level in the strategic agenda, while a detailed implementation plan regarding relevant research areas and topics is missing as well as a description of the administrative and organizational procedures required to stimulate, support and award excellent scientific results and encourage successful development/transfer of innovative solutions and technologies.

Recommendations for improvement

The Panel has the following recommendations:

- The Panel members encourage the Faculty to dedicate a significantly larger amount of resources to its scientific activities by taking the following steps: develop the careers of doctoral students; secure adequate financing of researcher mobility (both incoming and outgoing); provide access to databases of relevant scientific literature; invest in technical/technological research equipment; support dissemination of scientific results.

Quality grade

Minimum level of quality

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

Analysis

The Faculty continuously involves students at undergraduate, graduate and postgraduate levels in scientific and professional projects. Teachers and students participate jointly in these activities, coordinated by various research centres, departments and Faculty chairs. The Faculty strives to provide students with additional knowledge and research skills. Student participation is very high in various research areas related to transportation science. The students use the facilities and equipment available at the Faculty. Some strong evidence was demonstrated of master and PhD theses work related to national and European projects. However, the students are often focused on the professional aspects of these projects and the average scientific outcome of their activity is very limited, as demonstrated by few scientific publications co-authored by master/PhD students.

Recommendations for improvement

The Panel has the following recommendations:

- The Panel members encourage the Faculty to allocate more resources to innovative scientific project development and to involve more undergraduate, graduate and postgraduate students in research activities of the Faculty, including offering more opportunities to benefit from international experience and to attend presentations by guest lecturers.

Quality grade

Satisfactory level of quality

APPENDICES

1. Quality assessment summary - tables

2. Site visit protocol

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

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

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

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

<i>Quality grade by standard</i>				
<i>IV. Teaching and institutional capacities</i>	<i>Unsatisfactory level of quality</i>	<i>Minimum level of quality</i>	<i>Satisfactory level of quality</i>	<i>High level of quality</i>
4.1. The higher education institution ensures adequate teaching capacities.		X		
4.2. Teacher recruitment, advancement and re-appointment is based on objective and transparent procedures which include the evaluation of excellence.			X	
4.3. The higher education institution provides support to teachers in their professional development.			X	
4.4. 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	
4.5. 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	
4.6. The higher education institution rationally manages its financial resources.			X	

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

**Reakreditacija
Fakulteta prometnih znanosti
Sveučilišta u Zagrebu**

**Re-accreditation of the
Faculty of Transport and Traffic Sciences
University of Zagreb**

***Edukacija Stručnog
povjerenstva***

*Mjesto događanja:
Hotel International*

***Training of Panel
members***

*Venue:
Hotel International*

Miramarska 24, 10 000 Zagreb

	Ponedjeljak, 12. studenog 2018.	Monday, 12th November 2018
12:45-13:00	Ručak	Lunch
13:00-13:45	Edukacija članova stručnog povjerenstva – kratko predstavljanje Agencije, upoznavanje sa sustavom visokog obrazovanja u Republici Hrvatskoj	Training for the expert panel members – short presentation of ASHE, introduction to the higher education system in Croatia
13:45-14:30	Edukacija članova stručnog povjerenstva – upoznavanje s Postupkom reakreditacije, Standardima za vrednovanje kvalitete, pisanje završnog izvješća	Training for the expert panel members – introduction to the re-accreditation procedure, standards for the evaluation of quality and writing the final report
14:30-14:45	Pauza	Break
14:45-19:00	Priprema povjerenstva za posjet Fakultetu prometnih znanosti Sveučilišta u Zagrebu (rad na Samoanalizi)	Preparation of the expert panel members for the site visit (working on the Self-evaluation)

**Faculty of Transport and Traffic Sciences / Vukelićeva 4, 10 000
Zagreb**

	Utorak, 13. studenog 2018.	Tuesday, 13th November 2018
09:00 –10:00	Sastanak s dekanom i prodekanima	Meeting with the dean and vice-deans
10:00 –10:15	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
10:15 –11:00	Sastanak s radnom grupom koja je priredila Samoanalizu	Meeting with the working group that compiled the Self-evaluation
11:10 –12:10	Sastanak sa studentima (otvoren sastanak za sve studente preddiplomskog i diplomskog studija)	Meeting with the students (open meeting for the students undergraduate and graduate programs)
12:15 –13:00	Sastanak s Alumnima	Meeting with the alumni
13:00 –14:30	<i>Radni ručak Stručnog povjerenstva</i>	<i>Working lunch</i>
14:30 –15:30	<i>Sastanak članova Stručnog povjerenstva (Analiza dokumenata)</i>	<i>Internal meeting of the panel members (Document analysis)</i>
15:30 –16:15	Sastanak s vanjskim dionicima - predstavnicima strukovnih i profesionalnih udruženja, poslovna zajednica, poslodavci, stručnjaci iz prakse, vanjski predavači	Meeting with external stakeholders - representatives of professional organisations, business sector/industry sector, professional experts, external lecturers
16:15 -16:45	Sastanak s prodekanom za poslovanje	Meeting with the vice-dean for administrative and business affairs
16:45 –17:15	Organizacija dodatnog sastanka o otvorenim pitanjima, prema potrebi – osobe koje su zadužene za reviziju studijskih programa (prva i druga razina studija)	Organisation of additional meeting on open questions, if needed – group of people who are in charge of revising study programmes – bachelor and master
18:00 – 20:00	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

**Faculty of Transport and Traffic Sciences / Vukelićeva 4, 10 000
Zagreb**

	Srijeda, 14. studenog 2018.	Wednesday, 14th November 2018
09:00 –09:45	Sastanak s prodekanom za nastavu i studente	Meeting with the vice-dean for education and student affairs
09:45 –11:15	<i>Sastanak članova Stručnog povjerenstva (Analiza dokumenata)</i>	<i>Internal meeting of the panel members (Document analysis)</i>
11:15 –12:15	Sastanak s nastavnicima (u stalnom radnom odnosu, nisu na rukovodećim mjestima)	Meeting with full-time employed teachers (open meeting)
12:15 –13:15	Sastanak s asistentima	Meeting with teaching assistants
13:15 –13:30	Obilazak studentskih službi, predavaonica i laboratorija, <i>adresa</i> : Vukelićeva 4 i Kušlanova 2	Tour of student administration office, classrooms and laboratories , <i>address</i> : Vukelićeva 4 and Kušlanova 2
13:30 –15:00	<i>Radni ručak Stručnog povjerenstva</i>	<i>Working lunch</i>
15:00 –17:30	Obilazak Fakulteta (knjižnica, ured međunarodne suradnje, informatička služba, učionice, laboratoriji) i prisustvovanje nastavi, <i>adresa</i> : znanstveno-učilišni kampus Borongaj i aerodrom Lučko	Tour of the Faculty (library, international office, IT services, classrooms, laboratories) and participation in teaching classes, <i>address</i> : scientific-teaching kampus Borongaj and Lučko airport
17:30 -17:45	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
17:45 –18:00	Organizacija dodatnog sastanka o otvorenim pitanjima, prema potrebi – ERASMUS studenti (dolazni i odlazni)	Organisation of additional meeting on open questions, if needed – ERASMUS students (outgoing and incoming)
18:30 – 20:00	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

**Faculty of Transport and Traffic Sciences / Vukelićeva 4, 10 000
Zagreb**

	Četvrtak, 15. studenog 2018.	Thursday, 15th November 2018
09:00 – 10:00	<i>Sastanak članova Stručnog povjerenstva (Analiza dokumenata) i sastanak s prodekanom za nastavu i studente</i>	<i>Internal meeting of the panel members (Document analysis) and meeting with the vice-dean for education and student affairs</i>
10:00 – 10:45	Sastanak s prodekanom za znanost i vanjsku suradnju	Meeting with the vice-dean for science and external cooperation
10:45 – 11:30	Sastanak s voditeljima znanstvenih projekata	Meeting with the heads of research projects
11:30 – 11:45	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
11:45 – 12:45	Sastanak s predstojnicima odsjeka i zavoda	Meeting with the heads of divisions and departments
12:45 – 13:15	Organizacija dodatnog sastanka o otvorenim pitanjima, prema potrebi – sastanak s predstavnikom Hrvatske kontrole zračne plovidbe	Organisation of additional meeting on open questions, if needed – meeting with Croatian air traffic control
13:15 – 14:45	<i>Radni ručak Stručnog povjerenstva</i>	<i>Working lunch</i>
14:45 – 15:00	<i>Interni sastanak članova Stručnog povjerenstva</i>	<i>Internal meeting of the panel members</i>
15:00 – 15:15	Završni sastanak s dekanom i prodekanima	Exit meeting with the dean and vice-deans
16:00 – 17:30	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

Hotel International / Miramarska 24, 10 000 Zagreb

	Petak, 16. studenog 2018.	Friday , 16th November 2018
9:15 - 12:00	Sastanak Stručnog povjerenstva – Izrada nacrt završnog izvješća	Drafting the final report
12:00 - 13:00	Ručak	Lunch
13:00 - 16:00	Izrada nacrt završnog izvješća	Drafting the final report

**Odlazak recenzenata iz Zagreba / Departure of Panel Members from
Zagreb**

SUMMARY

The Panel would like to acknowledge the highly professional organisation of the re-accreditation process and the dedication of the Faculty to the process by greatly facilitating the access, collection, and processing of the information related to the re-accreditation.

The Faculty has analysed the deficiencies identified in the previous re-accreditation procedures and has implemented measures in accordance with the recommendations for improvement.

The quality assurance system of the Faculty includes all of the required activities. The stakeholders of the Faculty, students and alumni representatives, are engaged in the internal quality assurance system through the Quality Assurance Commission.

The general objectives of the study programmes and the individual courses are well in line with the mission and the vision of the Faculty, and the practical needs of society. The Faculty ensures that the programmes are in line with up-to-date professional and societal requirements, needs, standards, and developments by maintaining strong links and organising frequent meetings with industrial and societal organisations. Feedback from students is also taken into account in the improvement of study programmes; however, explicit mechanisms are not always clear. The analysis of resources, required for the delivery of study programmes, is often either limited or missing.

The Faculty provides student support for both domestic and foreign students. Although foreign students have good support in the English language, including the availability of lectures and literature, the English language should be more widely used in study programmes for domestic students. Grading of exams can also be improved by utilizing multiple examiners to rate exams independently and then discuss the findings to agree on a proper grade. The Faculty also needs to consider the causes of high drop-out rates in some study programmes and take measures to reduce them. The Faculty should consider the employability of their students when deciding on the enrolment quotas.

The Faculty possesses adequate and sustainable institutional capacities and mechanisms that enable a satisfactory level of quality of study programme delivery and research. Teaching capacities are limited, partially due to the restricting job coefficient system in place in Croatia, which constitutes a risk of impaired quality of studying. Teacher recruitment, advancement and reappointment processes are in place to enable the selection of best candidates.

The Faculty shows a constant transfer of knowledge and technologies with practitioners. Teachers and associates demonstrate a positive trend in scientific

publications and citations in high-impact databases. However, the average number of high-quality publications is still very low as well as the number of citations.