



**RE-ACCREDITATION OF THE FACULTY OF TRANSPORT AND
TRAFFIC SCIENCES, UNIVERSITY OF ZAGREB**

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**COMPOSITION OF THE EXPERT PANEL FOR RE-ACCREDITATION OF THE FACULTY
OF TRANSPORT AND TRAFFIC SCIENCES, UNIVERSITY OF ZAGREB**

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INTRODUCTION

Short Description of the Evaluated Institution

The Faculty of Transport and Traffic Sciences was established in 1984 at the University of Zagreb, when the County Court of Commerce approved its founding. However, the beginnings of transport studies can be traced back to the first generation of full time students at the Higher Postal and Telecommunications School in October 1962. The school was located in a new building at the time, in Vukelićeva 4 in Zagreb, which is the headquarters of the Faculty of Transport and Traffic Sciences today. In 1968, Traffic Studies were established as an interfaculty study programme organized by seven faculties at the University of Zagreb.

From 1986 to 2005 the Faculty provided the vocational studies (Level VI) and university studies (Level VII) with orientations in road transport, railway transport, postal transport and technology, air transport and river transport. The aeronautical orientation for the education of civil and military pilots and air traffic controllers started with the education of the first generation of students in 1992.

In 1997, the Faculty of Transport and Traffic Sciences set up the postgraduate study programme and the first generation of students of the scientific Masters and professional Masters degrees was enrolled. Finally, in 1999 the doctoral studies programme was set up and the first generation of PhD candidates was enrolled.

Since 2005, the studies have followed the Bologna Process at the undergraduate and graduate level (3+2) with three study programmes: TRAFFIC, ITS AND LOGISTICS (ITS - Intelligent Transport Systems) and AERONAUTICS. A three-year doctoral study began in the same year, its curriculum being in accordance with the Bologna system of education.

In the autumn of 2007 and 2008, one part of the Faculty was moved to the location of the University Campus Borongaj, so today the Faculty occupies four different locations: Vukelićeva 4, Kušlanova 2, the University Campus Borongaj and the Lučko airport, where there is Croatian Aviation Training Centre (HZNS) for the flight training of the students of AERONAUTICS, orientation civil pilots. As this presents difficulties for both students and teachers, there are plans to move the entire Faculty to the University

Campus Borongaj in the future, except for the flight training that would remain at the Lučko airport.

In September 2008, some teachers and students at the Faculty were involved in an anti-corruption investigation known as "Indeks". As a consequence of that investigation, a number of teachers were banned from teaching, and some were dismissed from the Faculty, which impacted on the human resources necessary for normal teaching. This incident also damaged the Faculty's public image. For these reasons, the Senate of the University of Zagreb appointed an expert Committee for the Analysis of the Situation at the Faculty of Transport and Traffic Sciences and later an expert Committee for the Implementation of the Measures for Work Improvement at the Faculty of Transport and Traffic Sciences. At the session of the Senate of the University of Zagreb held on December 13, 2011, the Report of the Expert Committee for the Implementation of the Measures for Work Improvement at the Faculty was accepted.

The Work of the Expert Panel

For its work the panel drew upon the self-evaluation report, prepared by the Faculty of Transport and Traffic Sciences of the University of Zagreb. It carried out site visits on 25 and 26 April. On 25 April the panel met the following groups:

- Faculty Management (Dean, Vice-dean for Education and Students, Vice-dean for Research and International Cooperation, Vice-dean for Business and Faculty Secretary General)
- The working group that compiled the self-evaluation report and representatives of the Quality Assurance Board
- Heads of Studies, teachers, teaching assistants and junior researchers, and students

On 26 April the panel met

- Faculty Management (for the second time)
- Vice-dean for Research and International Cooperation (for the second time)
- The research project leaders

This was followed by a tour of the Faculty (departments, laboratories, library, IT classroom, etc.) and participation in teaching. Two classes were visited, in both of which the panel held a brief question and answer session with the students.

DETAILED ANALYSIS BASED ON STANDARDS AND CRITERIA FOR RE-ACCREDITATION

1) Management of the Higher Education Institution and Quality Assurance

- 1.1 The mission of the Faculty of Transport and Traffic Sciences in Zagreb is to provide quality undergraduate, graduate and postgraduate education, research and professional work leading to effective and efficient transport systems. The Faculty sets out to conduct scientific, developmental and professional research of strategic importance for Croatia, having regard to the needs of sustainable development, transport, the economy, and the society. The Faculty is seeking to develop nationally and internationally recognizable excellence in education and research. *The panel feels that, while teaching standards and practices compare well at an international level, the research culture is at an early stage of implementation. PhD students should spend a higher proportion of their time researching. Both staff and research students should publish more in international peer reviewed journals and develop deeper connections with relevant research groups and institutes in other countries.*
- 1.2 The faculty has the relevant legal documents that set out formally its organisational structure. The faculty has a very effective management team. One weakness detected by the panel, however, is the absence of mentorship of undergraduate students. *It is therefore recommended that the faculty introduce a mentorship scheme. In UK and US universities, each staff member is assigned a group of students, which they must meet a few times each year. There are various ways in which the administration can ensure that these meetings occur, for example by requiring a signed report of the meeting. The mentor provides a "shoulder to cry on" for each student rather than academic tutoring.*
- 1.3 The study programmes offered by the institution are only partially aligned with university goals with respect to the achievement of international visibility and excellence in research. In addition to adequate time and resources for research, a coherent strategy is required. *It is recommended that the faculty consider the introduction of Personal Research Development Plans for each academic staff*

member. These plans, to be updated and reviewed annually by management, would encourage academic staff to plan and develop their research in a systematic way.

- 1.4 The institution has implemented effective systems of quality assurance and continuous quality improvement for teaching, although in relation to research such systems are less well developed and there is limited monitoring (see 1.3). In addition to the introduction of Personal Research Development Plans, the involvement of stakeholders in research should be strengthened to ensure industrial and societal relevance. ***It is recommended that, in addition to systems for quality assurance and continuous quality improvement for research, the involvement of stakeholders in research should be formalised and strengthened.***
- 1.5 The study programmes are aligned with the Baseline of the Croatian Qualification Framework.
- 1.6 The institution has implemented formal mechanisms for the monitoring and improvement of the quality of teaching, although feedback of the results of monitoring is not adequately provided to students or staff. ***It is recommended that a formal system of regular feedback of actions taken as a result of quality monitoring, especially from the student survey, is instituted for staff and students.***
- 1.7 The institution has implemented formal mechanisms for monitoring and improvement of the teaching quality.
- 1.8 The institution has made some effort to implement formal mechanisms for monitoring and improving research quality. ***It is recommended to improve research quality by forming adequately organized and equipped research laboratories, broader contacts with internationally recognized research community and publications in internationally recognized scientific journals.***
- 1.9 The institution has established formal rules and ordinances for the highest level of quality assurance and ethical conduct, notably ISO 9001, but so far it has limited experience of these in operation, so it is too early to form a view as to how effectively they are operating.

2) Study Programmes

- 2.1 Attempts to align enrolment quotas with the needs of society or industry are at an early stage. Information about the first jobs of graduates appears to be limited to enquiries addressed to the Unemployment Office. ***It is recommended that the faculty form better links with alumni to get a better idea of the needs of society and industry, both in terms of teaching and research. One way to do this would be to give students permanent email addresses, enabling them to be contacted after graduation.***
- 2.2 The institutional resources are currently inadequate for quality teaching. Students have insufficient space for independent study and inadequate access to digital resources. ***It is suggested that more desk space and computers be made available to students for independent study at the Borongaj Campus.***
- 2.3 Student learning outcomes are to some extent limited by the quality, quantity and availability of teaching materials. ***It is recommended that the heads of study programmes should improve teaching materials in the light of feedback from students and ensure their availability from secure websites.***
- 2.4 Appropriate arrangements are in place to calculate the allocation of ECTS credits so that it reflects the work load of the students. The students generally understand the arrangements for the allocation of credits although they reported the need for some refinements. ***It is recommended that monitoring of the credit weighting and associated workloads are carried out regularly with input from the students.***
- 2.5 The content and quality of each study programme appears to conform to internationally recognised standards, however the best way to ensure this is to encourage student mobility. ***It is recommended that the faculty further promote student mobility.***
- 2.6 A range of teaching methods is used and all learning materials are available on-line. However, the panel felt that in some cases a more problem-based approach to learning may be appropriate. ***It is recommended that the faculty review the teaching strategies being employed in its programmes to ensure that they are***

the most appropriate and effective and where appropriate deploy problem-based approaches.

2.8 The resources for learning are generally good, but not all teachers are using eStudent. ***It is recommended that all teachers use eStudent.***

2.9 Students have some opportunities to experience practical applications through internships, however more help is needed here. The number of internships available is limited. ***It is recommended that the faculty develop and expand its links with domestic and international industry to provide better opportunities for students to practice their learning.***

2.10 The institution has defined formal processes for the proposal, approval and implementation of new study programmes and has appropriate arrangements in place for the development, innovation and improvement of programmes. However, there is limited or no stakeholder involvement in these processes. ***It is recommended that stakeholder involvement in programme approval and development is strengthened.***

3) Students

3.1 The information packages available to potential students clearly inform them about the level of the programmes, qualifications and academic titles as well as possibilities for further education and employment. Application for enrolment is made via the Croatian Agency for Science who publishes the faculty's programmes and a call for enrolment is made in the press and on the faculty web pages. The faculty web pages and printed material provide information about the programmes, modules, courses of study and academic titles.

3.2 The admissions criteria and procedures are publicly stated and consistently applied. Their effectiveness in predicting student success is not regularly reviewed, but is controversial in any case. Nonetheless, raising the admissions criteria, particularly in mathematics, may address the dropout rate, which is felt to be too high. ***It is recommended that the admissions criteria be raised.***

- 3.3 There is concern about the high dropout rate, as this may suggest a lack of alignment between the entrance requirements and the requirements of the course, or between student expectations and experiences of the course. ***It is recommended that the faculty establish why the dropout rate is so high.***
- 3.5 The faculty at presents does not mentor undergraduates (see 1.2). ***It is recommended that the faculty introduce personal tutors.***
- 3.6 There is a shortage of laboratory and library space. ***It is recommended that the faculty provide better facilities for problem-based learning and independent study outside lectures.***
- 3.7 The amount of information that the faculty has about the employability of its graduates seems to be limited to data obtained from the Unemployment Office. Contact with alumni needs to be improved. ***It is recommended that the faculty strengthens its statistical information relating to employment and extends its contact with its alumni.***
- 3.8 With student membership of faculty teaching committee, appropriate opportunities are provided for the students to participate in the decision-making processes and in the resolution of matters affecting their experience.
- 3.9 There is no evidence that the institution keeps statistics on the employability of its graduates. ***It is recommended to start this with data from former students.***
- 3.10 There is considerable room for improvement in keeping in touch with alumni. ***It is recommended that the faculty improve contact with alumni and involve them in course design and delivery.***
- 3.11 The institution has organized student participation in Faculty Council as required by University Statute. ***It is recommended that there is organized information feedback available to the student community on decisions and other matters related to students proposals.***
- 3.12 Students receive insufficient feedback on course improvements resulting from their comments. ***It is recommended that students be better informed of course modifications resulting from their suggestions.***

4) Teachers

4.1The panel felt that PhD students were overburdened with teaching duties and that there were inadequate teachers to deliver the courses. ***It is recommended that more academic staff with qualifications be recruited to relieve the load on PhD students.***

4.2The panel found little evidence of a policy for the growth and development of human resources. ***It is recommended that teaching staff gain more international experience, attend more conferences linked to their areas of teaching and research, and participate more in staff exchanges with relevant universities abroad.***

4.3Given the number of students recruited each year, the faculty barely employs sufficient full-time teachers to meet the needs of the teaching programmes and maintain quality. ***It is recommended that plans are formalised to ensure a student-staff ratio that will provide sufficient teachers to ensure the quality and continuity of programmes as well as give sufficient time for the growth and development of human resources.***

4.4As noted in 4.3 the ratio between students and full-time teachers is high, up to 45:1 for some courses, although the average is less than 30:1. ***It is recommended that the faculty needs to have a more ambitious goal to reduce the student-staff ratio.***

4.5The panel found little evidence of a well-developed policy for teaching or non-teaching staff, as outlined in 4.2. ***It is recommended that greater attention is given to ensuring that non-teaching staff have opportunities to keep up to date with key developments in their fields of work.***

4.6The institution's procedures for promotion and other advancement by the teachers are appropriately developed, understood and accepted. They are implemented in a fair and consistent manner and there are opportunities to appeal.

4.7The policies governing the assignment of workloads are generally fair between teachers but they do not pay adequate attention to the balance between teaching and research. This creates particular pressure on teachers in maintaining and developing their research outputs. ***It is recommended that the institution carefully monitors the balance between time for teaching and research.***

4.8The panel found no evidence of excessive external commitments. ***Indeed, it is recommended that teaching staff should be encouraged to engage more with the outside community.***

5) Scientific and Professional Activity

5.1The faculty has plans in place for developing involvement in EU research programmes.

5.2Although monitoring the progress of research students and associate professors is in place, mechanisms to ensure the quantity and quality of staff research output are not well developed (see 1.3). Partly as a result, the research output fails to reach the levels expected for a centre of research of this type. ***It is recommended that the faculty strengthens and develops the mechanisms to ensure that research activities are improved.***

5.3In planning and implementing its research agenda the faculty is developing links both in Croatia and abroad. ***The faculty is recommended to continue in its efforts to realise its plans for national and international cooperation.***

5.4While the importance of research is clearly in the mission statement, and there is a broad awareness among the academic staff of the importance of research, this is at an early stage of implementation. As a result the research efforts do not fully make an intellectual contribution to the institution's reputation. ***It is recommended that the faculty makes efforts to publish more in international peer-reviewed journals.***

5.5 While the faculty has good arrangements for supporting its young researchers, there should be more encouragement to attend international conferences. There should be more training in the preparation of papers.

5.6 The research of the faculty is not at present systematically monitored (see 1.3). The faculty should further encourage technology transfer in line with its mission.

5.7 There is no evidence that the institution regularly keeps track of scientific productivity, citations, patents etc.

6) International Cooperation and Mobility

6.1 The institution has arrangements for acknowledging ECTS credits gained by incoming students but actually the inward mobility of students from other Croatian Higher Education Institutions is very limited. Most PhD students also completed their studies within the faculty. ***The institution is recommended to encourage and facilitate inward mobility including offering more provision in the English language and attracting more foreign guest lecturers.***

6.2 The students have opportunities to take some proportion of their studies abroad. The institution has set up a number of bilateral agreements. Notwithstanding this success, the level of mobility is relatively low. ***It is recommended that the institution continues to develop the opportunities for more students to benefit from international experience.***

6.3 The extent of international cooperation and mobility of teachers should be improved. The faculty provides encouragement for this but the opportunities for extended periods abroad are limited by the demanding teaching schedules given the high student numbers. The faculty has been involved in a number of cooperative activities with other HEIs in the region, but more could be done.

6.4 The faculty is stronger in some areas than others.

6.5 The opportunities for attracting students from abroad at present are limited by the absence of courses delivered in English or in a language other than Croatian. The development of ECTS credits for all programmes will support future developments in attracting foreign students but until programmes are made available in English or

other languages this will remain very limited. ***It is recommended that the institution moves towards offering courses in English and takes steps to improve the resources offered to international students.***

6.6 The faculty admits this limitation in its self-assessment report. ***It is recommended that the institution explores opportunities for cooperation in the EU LLL programme.***

6.7 The faculty needs to do more to develop international links. ***The faculty is recommended to continue to develop and extend its international links.***

7) Resources, Administration, Space, Equipment and Finance

7.1 Many of the resources for enrolled students are good. The class rooms and IT facilities for teaching are excellent. However, the library and laboratory facilities need to be expanded. Students complained about inadequate space and PCs for independent study between lectures on the Borongaj campus. ***The faculty is recommended to expand the space and PCs available for independent study on the Borongaj campus.***

7.3 Although the lecture rooms are well equipped and in excellent condition, there is little laboratory space or equipment, commensurate with a low level of research activity.

7.4 The institution is making efforts in providing the equipment and technical support and ensuring the best contribution in institution organization and its functions. ***It is recommended to continue this effort and to bring the institution to the appropriate level of IT support to all activities.***

7.6 The library is generally well equipped with up-to-date material and it houses the main relevant journals, mostly online. However, the library space is very small for the number of students, and it has very limited study areas. Also there are inadequate multi-copies of some key texts. ***The faculty is recommended to review the space allocation to the library and the library budget to ensure that it has adequate supplies of book stocks.***

7.7 The current ratio of academic to non-academic staff appears to be appropriate. However, given the existing number of undergraduates, inadequate numbers of teachers are restricting the time PhD students have available for research. ***It is recommended that the faculty recruit more teachers.***

7.8 Budgetary resources are limited especially given the size of the student cohorts. Nonetheless, more resources should be directed toward research. ***It is recommended that the institution review its financing arrangements to ensure that research is better resourced.***

FINAL RECOMMENDATIONS BY THE EXPERT PANEL FOR THE ACCREDITATION COUNCIL

1. The panel was impressed by the professionalism and dedication of the management team. The self-assessment report was as far as the panel could tell accurate, detailed and honest in its assessment of strengths and weaknesses.
2. The teaching facilities were excellent. The rooms visited were well equipped, recently refurbished, and comfortable for students.
3. QA procedures for teaching are robust and function efficiently. There are good methods for student feedback on teaching, although feedback to students (and indeed staff) on changes made in response to survey results could be improved.
4. The panel found the undergraduates in fine form, very articulate in English, open about their experiences, and clearly enjoying their studies. The faculty is doing a great job in motivating students.
5. The panel found evidence of good teaching practice. Some teachers were making effective use of eStudent, and others should be encouraged to do so too.
6. Digital communication between staff and students would, however, be improved by giving students email addresses. Life-long email addresses would help the faculty develop links with alumni, which the panel found were currently weak or non-existent.
7. There is currently insufficient space for independent and group study on the Borongaj campus, leading to students sitting on stairs.
8. In addition to more space for independent and group study, more PCs should be provided to facilitate access to digital learning materials.
9. Staff development procedures should be strengthened and greater staff mobility encouraged.

10. Undergraduates should be offered more career advice. Undergraduates felt they were receiving little support in finding internships or jobs after graduation.
11. Undergraduates would like more involvement in research projects. This is good training and provides motivation.
12. PhD candidates were found to be devoting 50% of their time to teaching, which the panel felt was too much. Some teaching experience is clearly beneficial for their research, but research should remain their main activity.
13. Research laboratories need more space, resources and attention.
14. There is a need for greater staff and student mobility, although the panel noted that the faculty was already taking steps in this direction.
15. Research excellence, which forms a central part of the faculty mission, needs to be planned into the workload.
16. The faculty needs to improve its international visibility by encouraging staff to publish more in international peer reviewed journals. To support this, management should introduce Personal Research Development Plans, which are updated and reviewed by management annually. In these plans, staff would state explicitly which papers and research proposals they plan for the forthcoming year.
17. To facilitate staff and student inward mobility, the faculty needs to introduce courses in English. AERONAUTICS would be a good area to start this.
18. The faculty should improve its linkages with industry with a view to encouraging more technology transfer in both directions help it adapt the study programmes to meet industrial needs. An important step to achieving this is building better links with alumni. Issuing students with life-long email addresses would make it much

easier for the faculty to contact alumni, and also help alumni stay in touch with each other.

19. The faculty should introduce a mentoring scheme for undergraduates. Each member of staff could be allocated a group of students and procedures could be implemented to ensure that students met their mentors, say, twice a year. The job of a mentor is to offer personal support and advice and thereby improve the student experience.
20. The faculty should prioritise the development of a research culture by ensuring that academic staff have the time and the resources to carry out research, on the one hand, and by ensuring that research is conducted and disseminated with the available resources and time, on the other. Personal Research Development Plans could prove to be an important instrument for achieving this goal.