



**RE-ACCREDITATION OF THE DEPARTMENT OF ELECTRICAL
ENGINEERING AND COMPUTING, UNIVERSITY OF DUBROVNIK**

Site Visit: 23st May 2012

The Expert Panel for the reaccreditation comprised of the following people:

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Introduction

Short Description of the Evaluated Institution

The Department of Electrical Engineering and Computing, University of Dubrovnik, was one of the six departments that were established at the beginning of the University operations in 2003 and started offering study programmes aligned with the Bologna reform in academic year 2004/2005.

The University of Dubrovnik is an integrated university, organised into departments as constituent units without legal autonomy.

At the end of academic year 2010/2011, there were 270 full-time employees at the University, with 155 teachers or researchers (75 PhDs).

The Department of Electrical Engineering and Computing offers undergraduate (3 years) and graduate (2 years) university study programmes in

- 1) Marine Electrical Engineering and Communication Technologies
- 2) Applied/Business Computing

Both study programmes are carried out in Dubrovnik. There are 10 teachers and 5 assistant lecturers at the Department.

The Work of the Expert Panel

For its work the panel drew upon the self-evaluation report, prepared by the Department of Electrical Engineering and Computing, University of Dubrovnik. They carried out a site visit to the campus of the Faculty on 23 May 2012. During the visit, the panel held meetings with the following groups:

- Management (Rector, Vice-Rectors for Science and Technology, Studies and QA, International Cooperation and Heads of Departments)
- Self-Evaluation Group and QA Committee
- Teachers
- Teaching assistants and junior researchers
- Students

The panel also examined the facilities and classrooms at the Dubrovnik campus and visited a few classes.

DETAILED ANALYSIS BASED ON STANDARDS AND CRITERIA FOR RE-ACCREDITATION

1) Institutional Management and Quality Assurance

1.1. The institution conducts systematic strategic planning process only partly. The institution is well aware of its current difficulties, and also aims at working to improve the current situation. An important element in this process is to make sure that the program and the teacher's qualifications are in line with the Standards of Training, Certification and Watchkeeping (STCW) Convention. This convention stipulates minimum requirements in relation to study program, teaching certificates and documentation, training equipment, etc.

1.2. Department of Electrical Engineering and Computing is part of the University in Dubrovnik, which has all legal documents formalising its organisational structure - among other, Statute of the University in Dubrovnik, Research Strategy and International Development Strategy.

1.3. Department of Electrical Engineering and Computing of University in Dubrovnik is fully integrated. The Research Strategy of the University of Dubrovnik 2009-2015 was adopted at the University Senate. University of Dubrovnik has established key strategy goals in its Statute as well.

1.4. Study programmes carried out by the Department of Electrical Engineering and Computing are aligned with its mission and enable students to gain qualification which assure employment in Croatia and abroad.

1.5. All study programmes are aligned with the Baseline of the Croatian Qualifications Framework.

1.6. Although students grade their teachers, there is no evaluation among the teachers themselves. Furthermore, teachers do not comment the results of the student evaluation. The learning outcomes stated by each teacher should be evaluated at least at the Department level.

1.7. Quality assurance systems are in place, and will continue to be further developed. In terms of monitoring, the current self-evaluation has been a positive experience. The next step is using these system outcomes for further improvement. Teachers evaluating teachers might be an interesting exercise.

1.8. Quality assurance systems are in place, but need to continue to be further developed. Here again the need to produce a self-evaluation report has contributed to a better monitoring of the research output. Scientific production (papers, conference participation, etc.) needs to be systematically kept up-to-date, preferably also accessible through the department's website. An award (or other) system to stimulate scientific excellence might prove useful. This is particularly needed given the limited overall research output by the Department members.

1.9. The institution has established formal rules and regulations which prescribe the highest level of ethical behaviour - i.e. the Code of Ethics for Scientists, Teachers and Associates of the University of Dubrovnik.

1.10. Employees and students are acquainted with the rules of ethical behaviour. Code of Ethics is publicly available on the University's webpage.

2) Study Programs

2.1. The institution has taken into account the curriculum, the program structure (with compulsory and elective subjects), the needs of the labour market, and the profiling of students according to their interests, aptitudes and competencies in certain areas in view of their employment after graduation.

2.2. The enrolment quotas are not in line with the institutional resources for quality teaching and analysis of pass rate. The pass rate is low in some subjects. Note that calculating (dynamic) cumulative pass rates (i.e., taking the highest pass rate over a period of time) is considered not appropriate. Teachers including assistants are overloaded with lessons. External associates do not hold consultations. The department has no policy about recoupment of lessons for students who were absent from lessons. Department has not done enough for improving of the pass rate.

2.3. Learning outcomes should be written more carefully (related to the example of learning outcomes given in the "Self-evaluation" document). The skills and knowledge obtained by the students must be in concordance with the clearly stated learning outcomes. They should be checked by the other teachers from the same department.

2.4. The structure of examination is such that it ensures impartiality and objectivity (written/oral exam, preliminary exams, and presentations, discussions, and written analysis of specific topics).

2.5. Student workload is expressed as the time required to complete all planned learning activities such as attending lectures and exercises, active participation in laboratory exercises, field work, writing and presenting seminar papers, independent study etc.

2.6. The number of teaching materials (university textbooks or author books published outside Croatia) should be larger. Students should have at their disposal several learning materials.

With regard to the content and quality of study programs and their compliance with international standards and international recognition, the standard is partly implemented. The program is not set up with STCW requirements and standards. Therefore, students do not get any STCW certificate and licenses.

2.7. Modern teaching methods are used: digital presentations, written elaboration of certain subjects, especially current ones, discussions on specific issues, confrontation of different attitudes/opinions, field work, projects of a lesser or higher importance and degree, visits to economic and other educational entities. It is important to note that the materials for most courses are available through DUEL system - (Dubrovnik University E-learning) - which is a system for distance learning based on Moodle software for design and implementation of online courses.

2.8. Teachers are preparing teaching material they feel is adequate. It is in print and/or electronic form (DUEL). Department teachers wrote three handbooks and also authored/co-authored chapters in books.

2.9. Field work for the students of the Department of Maritime Electrical Engineering and Communication Technologies is done on the school ship "Naše More" seven days a year. Other form of practical teaching is carried out in the HEP hydroelectric plant Dubrovnik, where students gain practical knowledge in the field of electrical power production. Students also travel to Zagreb for study visits to the Brodarski Institute and Faculty of Electrical Engineering and Computing of the University of Zagreb. Field classes are obligatory and the student attendance is monitored. When finished, students have to write reports. After discussion with students, the panel suggest more practical teaching.

2.10. This is considered as partly implemented. The program does not follow new standards and requirements according to STCW. There is no systematic renewing and monitoring of programs.

3) Students

3.1. The University publishes information about its study programmes, possibilities for employment, knowledge and competences gained upon graduation and possibilities for further education on its website. The Department organises presentations at local radio stations, in the magazine Alumni and in local print media, presenting student activities.

There are organised visits to schools in the region. The Department participates at University fairs with its information packages – brochures, leaflets and other material.

3.2. Admission criteria and procedures are publicly stated and consistently applied. Students are enrolled to higher education institution through State Matura exams.

3.3. A majority of the enrolled students graduated from vocational schools. Slightly above 20 % of them graduated from Gymnasiums. About 90% of the enrolled students finished secondary schools in the Split-Dalmatinska county. Previous knowledge of the candidates is taken into account so that additional instruction in mathematics and physics are organized for those with no (or not enough) knowledge (determined by the initial tests) and in order to facilitate the monitoring of teaching and an efficient fulfilment of obligations by such students.

3.4. On the university level there is only sports activities. The student budget is only 1% of the university budget which is not enough to organize some extra activities.

3.5. An important problem relates to the issue of certification. The students do not get any STCW certificate and they are obliged to pay for it. There are only consultations with students and no mentorship program.

3.6. There is a student restaurant and Student centre that takes care about the accommodation, nutrition and part-time employment of students, but there is no student dormitory which is a great problem for both Dubrovnik University and other higher education institutions.

- 3.7.** The institution provides financial support for the activities of the Student Council.
- 3.8.** The Department is part of the University and there are limits on hiring new assistants and professors at the university level. There is not enough qualified personnel to ensure adequate monitoring and feedback.
- 3.9.** In 2007 the University founded the UNIDU ALUMNI club which all students who completed undergraduate and graduate studies or undergraduate study program at some of the legal predecessors of today's University can join. When filling in the membership application form, students provide UNIDU with some valuable information on employment, work in their profession, waiting period until they find employment.
- 3.10.** The institution maintains contact with alumni, former students who are eminent professionals with successful careers. They are invited as guest speakers in order to communicate their experience to new generations. They are often shipmasters and renowned people from the tourism sector.
- 3.11.** Students are involved in the activities of the Senate, Departments' Expert Councils and University council.
- 3.12.** The problem is the recognition of graduates of this Department. Employers are not adequately informed about their work load. Because of that, students of Electrical Engineering in Zagreb and Split have a big advantage, also in finding jobs.
- 3.13.** Students can exercise their veto over Senate's decisions, but they have not used this right so far. Twice a year, in winter and summer semester, there is a student questionnaire where students can state their opinion. The average grade of all Department teachers at the undergraduate and graduate study programmes was 4.5, which can be considered as excellent.
- 3.14.** There is no communication between the Department management and the students representatives. Management should listen to the student's remarks and ideas and should also implement them.

4) Teachers

- 4.1.** The number of teachers in this Department is rather small. According to table 4.1 of the self-evaluation report only eight professors (in different ranks) are linked to the Department. Given this limited number it becomes difficult to adequately cover all the core disciplines. The 'help' from Zagreb (i.e., bringing in teachers from the University of Zagreb) is a good thing, but it does not (or cannot) solve the problem, given that external staff members do not associate themselves 100% with the Department and the University.
- 4.2.** The institution does not care enough about growth and development of human resources. They do not have a policy of growth and human employment. Employment at the University was reduced by the Ministry of Science, Education and Sports. There are no projects which could enable employment of young researchers. The latter can also be explained by the fact that in order to bring in external projects, publications are needed, and this is at current a problem.

4.3. There is a large number of external teachers, especially for the computing part of the study. Eight teachers from Faculty of Electrical Engineering in Zagreb seems a lot. This poses problems for the students because they have lectures on a certain subject two full days in a row which leaves them no time to comprehend the lectures before they hear the new material. Next, students can contact the external teachers for consultations only by email because the teachers spend most of their time in Zagreb and not in Dubrovnik.

4.4. As already mentioned, the number of full-time teachers is limited, and this is solved by bringing in people from Zagreb. In order to maintain an optimal ratio between students and full-time teachers, more local teachers or teaching assistants are needed.

4.5. Teachers are supported in improving their competences (conferences, international symposia, etc.).

4.6. The institution has developed and accepted clear procedure for teachers' advancement. The panel considers this to be fully implemented.

4.7. Lectures such as GMDSS regarding the STCW courses are taught by professors, but the exercises are conducted by teachers with no experience or qualifications to the vessels board in accordance with the STCW Convention – for maritime program. This is an important problem to solve, because of practical skills for maritime study. It should be noted that there is no doubt about the competence of the teaching staff. Teachers are overloaded with work (teaching), resulting in little activity and scientific publishing. A mentorship system is poorly formalized and its effectiveness is not sufficient.

4.8. There is no doubt that the department oversees a substantial commitment in teaching, but there are no formal rules for monitoring the process. Unable to get extra payment for research work forces teachers to work outside the institution in extra hours (probably – in Nautical High School). This results in a balancing act between the additional employment as a teacher and research in the institution. In summary, the Department mainly seems to engage in the academic profile, with the maritime profile being secondary.

5) Scientific and Professional Activity

5.1. The institution has a program of scientific research, but in terms of evaluating and reviewing this, progress can be made. The scientific output of staff members is very low, hence such a monitoring process can certainly help.

5.2. The institution has established good cooperation with other scientific organisations and industry both within and beyond Croatia (approx. 20 cooperation agreements with other universities from Austria, Bosnia and Herzegovina, Montenegro, Denmark, France, Ireland, Italy, Kosovo, Germany, Poland, Slovenia, Spain, Turkey, USA, and Great Britain). There is also a cooperation with Florence Art and Restoration Institute, Palazzo Spinelli.

5.3. At the level of the institution, research is acknowledged as a contributing component of its overall activity (besides teaching and administrative tasks), but – in relation to this Department - this needs to be made more explicit because scientific output is (very) limited.

5.4. There are three junior researchers at the Department, and the panel considers that the institution provides full support to them.

5.5. The institution has not developed and implemented a policy of promoting research excellence. Therefore, the panel concluded that these requirements are not implemented. This should be the first step in increasing the number of published scientific articles. The fact that the University has no PhD program adds to the problem.

5.6. There is no encouragement of paper publication at all. There should be some sort of an award (financial or other) for teachers or assistants who publish in (international) journals.

The institution has not developed and implemented a policy of encouraging academic publishing. Teacher said that overload is too big for any kind of research and publishing. They also noticed that some teachers with good academic publishing background have retired (partly explaining the situation).

5.7. There is an annual analysis of publication of research and other papers of all University departments, and different measures are taken to improve their work. The panel considers this criterion to be fully implemented.

5.8. The panel considers that, in line with its mission, the institution fully supports professional activities and services, ensures conditions for knowledge and technology transfer and monitors their evidence.

6) International Cooperation and Mobility

6.1. In the past three years there were four incoming students from abroad, with two of them staying for longer than six months. The University Academic Council establishes a Committee that analyses and compares the curricula of students coming from other HEIs, which seeks to promote student mobility. The panel considers this criterion to be fully implemented.

6.2. The time students spent abroad is fully recognized, and the International Relations Office helps students to get in touch with foreign institutions, choose a study program, get a visa, and find accommodation.

6.3. The institution does not encourage teachers to explore external mobility and international cooperation and also recognizes this to be a problem (p.77). Although there are some bilateral agreements with foreign universities, exchange is rather limited (often due to a lack of financial resources).

6.4. The University of Dubrovnik is a member of the following international institutions - Inter-University Centre Dubrovnik, Inter-University Centre for Research and Cooperation of Eastern and South-Eastern Europe (CIRCEOS), Uni Adrion, The virtual University of the Adriatic-Ionian initiative, Danube Rector's Conference, The Centre for International Research in Consumers, Locations & Environments (CIRCLE). The University largely contributes to joint goals.

6.5. The international cooperation at the University of Dubrovnik has not yet reached the expected level. The most significant drawback is the lack of financial resources for

both maintaining the established contacts and realization of new projects. Such projects are courses in English aimed at attracting foreign students, and the implementation of joint study programs with some foreign higher education institutions. The panel recognises that due to cost-saving measures, enacted by the Senate of the University of Dubrovnik and resulting in travel restrictions, teachers and other staff members are not able to visit their foreign partners, which is an obstacle for further cooperation. Improvements could be possible with the additional funding for international activities.

6.6. The Institution was awarded the Erasmus Charter in 2009. It is expected that eleven students will be hosted at the Dubrovnik University through the Erasmus program in the academic year 2012/2013.

6.7. There are twenty bilateral cooperation agreements signed with other universities and considering the involvement in Erasmus program the panel considers this criterion to be fully implemented.

7) Resources, Administration, Space, Equipment and Finance

7.1. The University of Dubrovnik plans to move into new premises, which will further improve the existing resources and provide opportunity to form new laboratories. Existing facilities and resources are satisfactory.

7.2. As this institution is a part of an integrated university, the panel concluded that this criterion does not apply.

7.3. There are computer labs in which lectures and exercises are carried out as well as electro-technical laboratory where the equipment is mainly used for laboratory exercises. The Department of Electrical Engineering and Computing does not have an area used specifically for the scientific-research work.

7.4. The teachers and the assistants should have enough working space for their scientific research and teaching activity (consultations). It is hard to do this when four people share the same office.

7.5. The institution collects, analyzes and uses information relevant to improvement of its activities.

7.6. The size, usability and availability of the library are adequate. Obviously due to cutbacks in financial resources some volumes of journals did not get extended or end at 2008, which resulted in incomplete collections. Most relevant journals are accessible.

7.7. The Department of Electrical Engineering and Computing is a constituent of an integrated university and has one administrative employee. The University of Dubrovnik has dedicated services and offices for all other administrative and technical activities. Their organization, job descriptions and the number of employees is as prescribed by the University regulations.

7.8. In the self-evaluation report the institution expressed a concern for the next period when all investments will be canceled. Current situation is satisfactory. The priorities of the Department of Electrical Engineering and Computing are to obtain equipment for the communication laboratory, as well as adequate equipment in the field of power

electronics and motor drives in order to increase teaching quality at undergraduate and graduate studies.

7.9. The Department of Electrical Engineering and Computing belongs to the University of Dubrovnik and does not have autonomy in financial operations. However, the University of Dubrovnik complies with this criterion.

FINAL REPORT AND RECOMMENDATIONS BY THE EXPERT PANEL FOR THE ACCREDITATION COUNCIL

STRONG POINTS

- The 'city of Dubrovnik' is a strong label, and this adds to the visibility and international orientation of the University of Dubrovnik
- A variety of new and modern teaching methods are being used and are also very much appreciated by the students
- The institution maintains good contacts with its alumni
- The institution has established very good cooperation with other scientific organizations and industry, and has a strong international cooperation and mobility

WEAK POINTS

- Very limited 'home-based' teaching staff
- Teaching work loads are rather substantial, which is – among others – reflected in a (very) modest scientific publication output
- The institution does not have its own PhD program
- Research excellence is not pursued, encouraged or rewarded
- Communication between the management and student representatives is rather weak

RECOMMENDATIONS FOR IMPROVEMENT OF QUALITY

1) Institutional Management and Quality Assurance

It is recommended that the institution:

- Makes sure that teachers have the necessary Standards of Training, Certification and Watchkeeping (STCW) qualifications
- Uses the results of the quality assurance system to further improve teaching standards
- Should set up a process whereby teachers evaluate teachers
- Sets up an award system to stimulate scientific excellence
- Communicates more with student's representatives

2) Study Programs

It is recommended that the institution:

- Restructures the study program so that teachers and assistants are less overloaded with teaching
- Pays particular attention to certain (very) low pass rates for certain subjects (i.e. finding an explanation and also ameliorating the problem)
- Develops a policy about recoupment of lessons for students who were absent
- Aligns study program with STCW requirements
- Pays more attention to the possibility of setting up summer camps and practice
- Increases the number of international teaching material (i.e., published outside Croatia)
- Makes possible for students to obtain STCW certificates

3) Students

It is recommended that the institution:

- Increases the number of financial support for student's activities
- Makes possible for students to obtain STCW certificates
- Pays attention or is conscious about to the issue of a lack of student's dormitories
- Makes sure students get enough feedback to their suggestions

4) Teachers

It is recommended that the institution:

- Makes sure that (more) teachers are fully qualified according to the STCW requirements
- Employs more (full-time) teachers to decrease the existing teaching workload, and to be less dependent upon external associates in teaching. Not having enough FTE teachers may lead to a potential problem of being understaffed
- Takes better care of the growth and development plans of the existing human resources, also in view of the age pyramid of the teaching staff
- Makes sure that teachers are able to spend more time to do scientific research (which should be reflected in an increased number of scientific publications)
- Makes teachers more aware of the importance of scientific research
- Optimizes the support the Department receives from external associates in relation to scientific output (e.g. apply for joint research money)

5) Scientific and Professional Activity

It is recommended that the institution:

- Stimulates teachers to increase the number of scientific publications
- Provides policy support to young researchers
- Implements a policy for promoting research excellence
- Implements a system for encouraging and rewarding academic publishing
- Thinks about the possibility of introducing a PhD program

6) International Cooperation and Mobility

It is recommended that the institution:

- Encourages teachers to explore the possibility of external mobility and international cooperation
- Organizes a number of courses in English to attract foreign students
- Optimizes the large number of bilateral cooperation agreements in, for instance, joint publications or joint research applications

7) Resources: Administration, Space, Equipment and Finance

It is recommended that the institution:

- Creates an (study) area specifically devoted for scientific-research
- Creates more suitable working space for teachers to do scientific research (i.e. reassess office space sharing)
- Tries to keep complete certain journal volumes
- Makes sure that laboratories are kept up-to-date