

CONTENTS

| INTRODUCTION | 3 |
|--|---|
| SHORT DESCRIPTION OF THE STUDY PROGRAMME | 5 |
| RECOMMENDATION BY THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL | 5 |
| RECOMMENDATIONS FOR THE CONTINUED IMPROVEMENT OF THE STUDY PROGRAMME. | 5 |
| ADVANTAGES OF THE STUDY PROGRAMME | 6 |
| DISADVANTAGES OF THE STUDY PROGRAMME | 6 |
| EXAMPLES OF GOOD PRACTICE | 6 |
| COMPLIANCE WITH THE PRESCRIBED CONDITIONS FOR THE DELIVERY OF A STUDY PROGRAMME | 7 |
| QUALITY ASSESSMENT | 9 |

INTRODUCTION

The Expert Panel appointed by the Agency for Science and Higher Education (ASHE) created this Report on the Re-accreditation of the University Postgraduate (Doctoral) Programme *Doctoral Study Programme in the area of Engineering Sciences, in the field of Electrical Engineering* on the basis of the Self-Evaluation Report of the Programme, other documentation submitted and a visit to the Faculty of Engineering.

The Agency for Science and Higher Education (ASHE), a public body listed in EQAR (European Quality Assurance Register for Higher Education) and a full member of ENQA (European Association for Quality Assurance in Higher Education), re-accredits higher education institutions (hereinafter: HEIs) and their study programmes in line with the Act on Quality Assurance in Science and Higher Education (Official Gazette 45/09) and the Ordinance on the Content of a Licence and Conditions for Issuing a Licence for Performing Higher Education Activity, Carrying out a Study Programme and Re-Accreditation of Higher Education Institutions (OG 24/10). In this procedure parts of activities of higher education institutions and university postgraduate study programmes are re-accredited.

The Expert Panel is appointed by the Agency's Accreditation Council, an independent expert body, to carry out independent evaluation of the post-graduate university study programme.

The Report contains the following elements:

- Short description of the study programme,
- The recommendation of the Expert Panel to the Agency's Accreditation Council,
- Recommendations for institutional improvement and measures to be implemented in the following period (and checked within a follow-up procedure),
- A brief analysis of the institutional advantages and disadvantages,
- A list of good practices found at the institution,
- Conclusions on compliance with the prescribed conditions of delivery of a study programme,
- Conclusions on compliance with the criteria for quality assessment.

Members of the Expert Panel:

- President of the Expert Panel, Dr. Gordon Dalton, University College Cork, Ireland,
- Prof. Daniele Nardi, Sapienza University of Rome, Italy,
- Prof. Karol Kalna, College of Engineering, Swansea University, UK,
- Prof. Jens Grabowski, Georg-August-Universität Göttingen, Germany,
- Prof. Aurélio Campilho, Faculdade de Engenharia da Universidade do Porto, Portugal,
- Prof. Aurelian Francillon, EURECOM Graduate School and Research Center in Communication System, France,
- Prof. Zoltán Fülöp, University of Szeged, Hungary,
- Giuseppe Moschetti, Huddersfield University, UK,
- Prof. Ove T. Gudmestad, University of Stavanger, Norway,
- Maximilian Lesellier, Robotique et de Microélectronique de Montpellier (LIRMM), France,
- Massimiliano Ferrucci, National Physical Laboratory, KU Leuven, Belgium,
- Prof. Hongming Xu, Department of Mechanical Engineering, University of Birmingham, UK,
- Prof. Vadim Silberschmidt, Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough University, UK,
- Prof. Sergey V. Utyuzhnikov, School of Mechanical, Aerospace and Civil Engineering, University of Manchester, UK,
- Stjepan Sučić, Končar inženjering za energetiku i transport, d.d., Croatia,

- Ana Carolina dos Santos Paulino, University of Strasbourg, France,
- Prof. Kjell Ivar Øvergård, Faculty of Technology and Maritime Science, University College of Southeast Norway, Norway,
- Prof. Aleksander Sladkowski, Silesian University of Technology, Poland,
- Prof. Stojan Petelin, univ. dipl. inž. stroj., Fakulteta za pomorstvo in promet, Univerza v Ljubljani, Slovenia,
- Hilde Sandhåland, Department of Maritime Studies, Stord/Haugesund University College, Norway.

The following Expert Panel members visited the higher education institution:

- Prof. Sergey V. Utyuzhnikov, School of Mechanical, Aerospace and Civil Engineering, University of Manchester, United Kingdom of Great Britain and Northern Ireland,
- Professor Ove T Gudmestad, University of Stavanger, Kingdom of Norway,
- Maximilian Lesellier, Robotique et de Microélectronique de Montpellier (LIRMM), French Republic, doctoral candidate,
- Massimiliano Ferrucci, National Physical Laboratory, KU Leuven, Kingdom of Belgium, doctoral candidate,
- Giuseppe Moschetti, Huddersfield University, United Kingdom of Great Britain and Northern Ireland, doctoral candidate.

In the analysis of the documentation, site visit and writing of the report the Panel was supported by:

- Viktorija Juriša, coordinator, ASHE,
- Ivana Rončević, interpreter at the site visit and translator of the Report, ASHE.

During the visit to the Institution, the Expert Panel held meetings with the representatives of the following groups:

- Management (Dean, Vice Deans),
- Head of the PhD programme,
- Internal meeting of the Expert panel (document analyses),
- PhD candidates in a group,
- PhD candidates individual or small group meetings,
- Supervisors and lecturers on the PhD study programme.

The Expert Panel also had a tour of the library, IT rooms, student register desk, classrooms and the laboratories.

SHORT DESCRIPTION OF THE STUDY PROGRAMME

Name of the study programme contained in the licence: Postgraduate Doctoral Study Programme in the Area of Engineering Sciences, in the Field of Electrical Engineering Institution providing the programme: University of Rijeka Education provider(s): Faculty of Engineering Place of delivery: University of Rijeka Faculty of Engineering Scientific area and field: Engineering Sciences; field: Electrical Engineering Learning outcomes of the study programme: Not defined Number of doctoral candidates: 27 Number of teachers: 24 Number of supervisors: 10 The ratio of doctoral students to supervisors: 1 : 2.7

RECOMMENDATION BY THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL

Upon the completion of the re-accreditation procedure and the examination of the materials submitted (Self-Evaluation Report etc.), the visit to the higher education institution and interviews with HEI members in accordance with the visit protocol, the Expert Panel renders its opinion in which it recommends to the Accreditation Council of the Agency the following:

Issuing a letter of expectation

RECOMMENDATIONS FOR THE CONTINUED IMPROVEMENT OF THE STUDY PROGRAMME

- 1. The access to international journal papers should be prioritized. In case databases are not available, students should utilize the library exchange system, while literature could be provided from international contacts. The students should allow reasonable time for the library system to obtain such information.
- 2. International cooperation and student exchange should be highly prioritized, for example through increased use of Erasmus + grant applications and bilateral agreements with foreign universities. Likewise, the University should attempt to attract international exchange students by advertising visiting PhD student positions or by inviting PhD students from abroad.
- 3. The PhD students must be given sufficient time to work on their research tasks, for example by limiting the number of teaching hours. Teaching contracts should clearly state the number of teaching hours. For industry funded students, contracts with employers should state the number of hours the students are released from work. Furthermore, it should be very clear to all PhD students which requirements are set concerning whether the paper must be approved for journal publication or whether it is acceptable that a paper is submitted prior to the submission of the thesis.
- 4. Theses based on published and/or submitted papers and a considerable summary of how the papers are linked to answer the research question should be permitted as the Scandinavian model for PhD thesis as an alternative to the presentation of a monograph report.
- 5. Cooperation with industry should be maintained through challenging times for the industry. The possibility to establish industry advisory boards should be investigated to ensure that the research is realistic and in compliance with industry needs. Cooperation with the other engineering programme (multidisciplinary projects) will strengthen the programme.

6. The HEI did not indicate learning outcomes and they are expected to draft learning outcomes for the programme and specializations/modules.

ADVANTAGES OF THE STUDY PROGRAMME

- 1. The taught element is beneficial for PhD education and provides a good background for research.
- 2. Many of the PhD thesis subjects appear very relevant for industry.
- 3. Many of the staff members have important international connections.
- 4. It was noted that students manage to publish interesting papers on conferences and in journals.
- 5. The students were in general well motivated for the research work being undertaken.

DISADVANTAGES OF THE STUDY PROGRAMME

- 1. The international dimension of the programme should be broadened by inviting exchange students (e.g. Erasmus) to the University; this will be possible by delivering more courses in the English language and by advertising on the Faculty website.
- 2. Stakeholders should be more involved, see the suggestion above.
- 3. Students working in industry have a hard time finalizing their research as the time available "after work" may not be sufficient. They could be encouraged by the possibility to submit a paper based thesis or by requiring industry to give them time off during the day to attend courses and labs.

EXAMPLES OF GOOD PRACTICE

- 1. The University of Rijeka has obtained external funding in the amount of EUR 5 million from EU structural fund.
- 2. Increased use of the English language ensures wide dissemination of research results.
- 3. Publications are important parts of dissertations.
- 4. The impression was that the mentors and the students work very well together.

COMPLIANCE WITH THE PRESCRIBED CONDITIONS FOR THE DELIVERY OF A STUDY PROGRAMME

| Minimal legal conditions: | YES/NO |
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| | notes |
| 1. Higher education institution (HEI) is listed in the Register of Scientific Organisations in the scientific area of the programme, and has a positive reaccreditation decision on performing higher education activities and scientific activity. | YES |
| 2. HEI delivers programmes in the two cycles leading to the doctoral programme, i.e., first two cycles in the same area and field/fields (for interdisciplinary programmes), and employs a sufficient number of teachers as defined by Article 6 of the Ordinance on the Content of a Licence and Conditions for Issuing a Licence for Performing Higher Education Activity, Carrying out a Study Programme and Re-Accreditation of Higher Education Institutions (OG 24/10). | YES |
| 3. HEI employs a sufficient number of researchers, as defined by Article 7 of the the Ordinance on Conditions for Issuing Licence for Scientific Activity, Conditions for Re- Accreditation of Scientific Organisations and Content of Licence (OG 83/2010). | YES |
| 4. At least 50% of teaching as expressed in norm-hours is delivered by teachers employed at the HEI (full-time, elected into scientific-teaching titles). | YES |
| 5. Student: teacher ratio at the HEI is below 30:1. | YES |
| 6. HEI ensures that doctoral theses are public. | YES |
| 7. HEI launches the procedure of revoking the academic title if it is determined that it has been attained contrary to the conditions stipulated for its attainment, by severe violation of the studying rules or based on a doctoral thesis (dissertation) that has proved to be a plagiarism or a forgery according to provisions of the statute or other enactments. | YES |
| Additional/ recommended conditions of the ASHE Accreditation Council for passing | YES/NO |
| a positive opinion | notes |
| 1. HEI (or HEIs in joint programmes) has at least five teachers appointed to scientific- teaching titles in the field, or fields relevant for the programme involved in its delivery. | YES |
| 2. In the most recent reaccreditation, HEI had the standard Scientific and Professional Activity (e.g. Artistic for those in the arts field) marked as at least "partly implemented" (3). | YES |
| 3. The doctoral programme is aligned with the HEI's research strategy. | YES |
| 4. The candidate : supervisor ratio at the HEI is not above 3:1. | YES |
| 5. All supervisors meet the following conditions: | |
| a) PhD, elected into a scientific title, holds a scientific or a scientific-teaching position | YES |
| and/or has at least two years of postdoctoral research experience; b) active researcher in the scientific area of the programme, as evidenced by publications, participation in scientific conferences and/or projects in the past five years (table 2, Supervision of the programme). | YES |
| Supervisors and candidates); c) confirms feasibility of the draft research plan upon admission of the candidate (or submission of the proposal); | YES |
| d) ensures the conditions (and funding) necessary to implement the candidate's research (in line with the draft research plan) as a research project leader, co-leader, participant, | NO |
| collaborator or in other ways; | NO |
| e) trained for the role before assuming it (through workshops, co-supervisions etc.); f) received a positive opinion of the HEI on previous supervisory work. | NO |
| 6. All teachers meet the following conditions: | YES |
| a) holds a scientific or a scientific-teaching position; | YES |
| b) active researcher, recognized in the field relevant for the course (table 1, Teachers). | |
| 7. The supervisor normally does not participate in the assessment committees. | NO |
| 8. The programme ensures that all candidates spend at least three years doing independent research (while studying, individually, within or outside courses), which includes writing the thesis, publishing, participating in international conferences, field work, attending courses relevant for research etc. | YES |
| 9. For joint programmes and doctoral schools (at the university level): | (Not |

| cooperation between HEIs is based on adequate contracts; joint programmes are | Applicable) |
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| internationally recognized, and delivered in cooperation with accredited HEIs; the HEI | |
| delivers the programme within a doctoral school in line with the regulations (it is based on | |
| contracts in the case of multiple institutions, and the HEIs ensure good reaccreditation | |
| aimed at supporting the candidates); | |
| at least 80% of courses are delivered by teachers employed at HEIs within the consortium. | |

QUALITY ASSESSMENT

| | | Quality assessment ("high level of quality" or "improvements are necessary") and the explanation of the Expert Panel |
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| 1. | RESOURCES: TEACHERS, SUPERVISORS, RESEARCH CAPACITIES AND INFRASTRUCTURE | |
| 1.1. | HEI is distinguished by its scientific/ artistic achievements in the discipline in which the doctoral study programme is delivered. | Improvements are necessary The HEI is competitive in research on an international level. This competitiveness is demonstrated by the amount of scientific publications produced and the HEI's participation in international collaborations. The HEI is also aggressive in its pursuit of resources both within Croatia and international sources, e.g. the European Union. The HEI has established a vision for the future of Croatia's competitiveness in global research and is actively working towards ensuring its vision. The Expert Panel recognizes these efforts and encourages their continuity. |
| 1.2. | The number and workload of teachers involved in the study programme ensure quality doctoral education. | High level of quality The HEI has a mechanism for ensuring quality education; >80% of coursework is administered by teachers employed by the Faculty. |
| 1.3. | The teachers are highly qualified researchers who actively engage with the topics they teach, providing a quality doctoral programme. | High level of quality All teachers have two or more publications in the relevant research field in the past five years. |
| 1.4. | The number of supervisors and their qualifications provide for quality in producing the doctoral thesis. | High level of quality The HEI has established regulations for ensuring quality in the production of doctoral theses. The HEI's supervisor : candidate ratio is 1:2.7, which satisfies the suggested threshold of 1:3. All supervisors of PhD candidates have at least two publications in the last five years as indicated by Self- evaluation report. |
| 1.5. | The HEI has developed methods of assessing the qualifications and competencies of teachers and supervisors. | High level of quality The HEI has established a mechanism for ensuring quality supervision of PhD candidates. In particular, only teachers who have published at least two papers in the past five years can be appointed as doctoral thesis supervisors. The data provided in the Self-evaluation report support this requirement. |
| 1.6 | The HEI has access to high-quality resources for research, as required by the programme discipline. | Improvements are necessary The HEI provides an extensive number of laboratory facilities and lecture halls for the delivery of the doctoral study. Resources accessible to the PhD candidates include computer centres and a library. The HEI has been proactive in modernizing their facilities by pursuing external sources of funding, one particular example being the application to a 5 million euro structural fund for new scientific equipment. Despite the lack of wide access to online journal databases (a |

| | | phenomenon common to all Croatian higher education institutions and not a consequence of the HEI's management), the HEI has ensured access to many publications through alternative methods, such as collaboration with other institutes. |
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| 2. | INTERNAL QUALITY ASSURANCE OF THE PROGRAMME | |
| 2.1. | The HEI has established and accepted effective procedures for proposing, approving and delivering doctoral education. The procedures include identification of scientific/ artistic, cultural, social and economic needs. | High level of quality The University of Rijeka has prescribed a precise procedure for the application and the amendment of study programmes by the Regulations on Accreditation of Study Programmes, which are available on the university website. Until now, there have not been any graduates in the programme. The panel noted that the three-month oversea internship is a very good and useful practice. Students' satisfaction with the programme is quite high. |
| 2.2. | The programme is aligned with the HEI research mission and vision, i.e. research strategy. | High level of quality The programme is aligned with the scientific research strategy of the Faculty and the University. |
| 2.3. | The HEI systematically monitors the success of the programmes through periodic reviews, and implements improvements. | Improvements are necessary The scientific productivity indicators of doctoral candidates have been systematically monitored and annual reports have been published. The indicators include the following: Continuous monitoring and analyses of research productivity of supervisors and candidates; Collecting and analysing feedback from candidates; Mandatory annual evaluation of supervisors by doctoral candidates. The panel noted that in the Self-assessment report of the programme only two projects have the research topics identified. |
| 2.4. | HEI continuously monitors supervisors' performance and has mechanisms for evaluating supervisors, and, if necessary, changing them and mediating between the supervisors and the candidates. | High level of quality There is mandatory annual evaluation of supervisors by doctoral candidates in which candidates provide a short overview of their work and an evaluation of their supervisor and the study programme. The Regulations define the procedure for changing the supervisor when a candidate is not satisfied with the current one. Until now there have not been any graduates in the programme. |
| 2.5. | HEI assures academic integrity and freedom. | High level of quality The doctoral thesis has been checked by the university official software for detecting plagiarism. Ethical content is covered in the course "Scientific Research Methodology. |
| 2.6. | The process of developing and defending the thesis proposal is transparent and objective, and includes a public presentation. | Improvements are necessary The programme has established procedures for producing and defending the doctoral thesis proposal. The candidate defends the proposal before the Committee for the Assessment of the |

| | The HEI establishes admission quotas with respect to its teaching and supervision capacities. | High level of quality The number of PhD students admitted per year is limited to ensure supervision and not to meet the condition of the maximum number of three candidates per supervisor. Supervisor quality and appropriateness is assessed based on the number of published papers in a field of research. Students choose their supervisor based on their personal research |
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| 3. | SUPPORT TO DOCTORAL CANDIDATES AND THEIR PROGRESSION | |
| 2.10 | . Tuition fees are determined on the basis of transparent criteria (and real costs of studying). | High level of quality The amount of the tuition fee is based on the cost of study that includes the average cost of teaching and research, cost of visiting lecturers, cost of equipment use and the like. |
| 2.9. | Funds collected for the needs of doctoral education are distributed transparently and in a way that ensures sustainability and further development of doctoral education (ensures that candidates' research is carried out and supported, so that doctoral education can be completed successfully). | High level of quality The sources of financing for the doctoral study programme are the funds of the Faculty of Engineering as well as other sources of financing, such as tuition fees, foundations, scholarships of local governments and the state, foreign sources, and collaborative projects. |
| 2.8. | The HEI publishes all necessary information on the study programme, admissions, delivery and conditions for progression and completion, in accessible outlets and media. | High level of quality All necessary information on the study programme, admissions, delivery and conditions for progression and completion is available on the website of the Faculty. |
| 2.7. | Thesis assessment results from a scientifically sound assessment of an independent committee. | Improvements are necessary The study programme has elaborate procedures for writing, assessing and defending a doctoral thesis. The doctoral thesis is assessed by the Committee for the Assessment and Defence of the Doctoral Thesis. At least one member of the Committee is external. A supervisor should not be a member of the defence committee. Until now there has not been any defended thesis in the programme. The panel recommended the Scandinavian style of dissertations as one of the options of thesis defence. The current requirement of six publications for this option seems too strict. |
| | | Doctoral Thesis Proposal. The recommendation of the panel is that at least one member of the Committee for the Assessment of the Doctoral Thesis Proposal must be external (from another national university or abroad). Only one thesis proposal and one assessment template have been submitted. The panel noted that the research topic is fixed at the end of the second year. The research might not be focused because the scopes of the project are unclear. |

| | interests. In table 2 some professors seem to supervise more than three PhD students. These students are in the first two years of their study programme and therefore without a formally defined PhD topic. The panel advise a formal definition of the students' research topics before the second year to provide students with a defined research aim throughout their studies. |
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| 3.2. The HEI establishes admission quotas on the basis of scientific/ artistic, cultural, social, economic and other needs. | High level of quality Some doctorate projects are developed in collaboration with private companies, or students from private companies pursue a part-time doctoral study. It is not possible to establish the statistics of unemployment/companies funded doctoral students since no doctoral titles have been awarded yet due to the recent start of the doctoral programme. |
| 3.3. The HEI establishes the admission quotas taking into account the funding available to the candidates, that is, on the basis of the absorption potentials of research projects or other sources of funding. | Improvements are necessary Most doctoral candidates fund their own studies or their employer pays their tuition fees. There should be stronger quality assurance of the intake of students so that the best candidates are admitted according to the absorption potential of research projects and available funding, either from industry or public funding. Full-time doctoral candidates, both teaching assistants and research assistants, are financed by the Croatian Science Foundation. |
| 3.4. The HEI should pay attention to the number of candidates admitted as to provide each with an advisor (a potential supervisor). From the point of admission to the end of doctoral education, efforts are invested so that each candidate has a sustainable research plan and is able to complete doctoral research successfully. | Improvements are necessary All students start the doctorate study programme with a supervisor assigned based on the student's research interests. At the end of every year students submit a report stating the progress made in the past year and a plan for the future studies. In the second and fourth semesters, students give public presentations of their research results. At the end of the second year/at the beginning of the third year of the doctoral study, the students have to define their PhD thesis proposals and defend it publicly. Before the theme proposal at the second year the thesis aim is defined informally. The panel advise an earlier formal definition of the doctoral study theme which may provide students with a research aim. |
| 3.5. The HEI ensures that interested, talented and highly motivated candidates are recruited internationally. | Improvements are necessary The Faculty advertises the call for Doctorate studies on their own website and in a local journal six months in advance. Graduate students are encouraged to get involved in research projects and to start a doctorate, providing the Croatian Science Foundation funds them. More efforts should be made in recruiting the best candidates internationally. |
| 3.6. The selection process is public and based on choosing the best applicants. | Improvements are necessary The selection process evaluates students' previous studies and their relevance to the doctoral theme, the achieved grades and |

| | the students' research interests. A motivational interview is carried out with all applicants. The panel advise an earlier definition of the doctoral study theme. |
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| 3.7. The HEI ensures that the selection procedure is transparent and in line with published criteria, and that there is a transparent complaints procedure. | High level of quality All applicants are interviewed prior to starting the doctoral study. No application has been rejected since there have been fewer applicants than available places, and there have been no complains. |
| 3.8. There is a possibility to recognize applicants' and candidates' prior learning. | High level of quality Students with prior learning can be exempt from attending classes or taking exams up to 30 ECTS. Postgraduate students with significant scientific achievements are exempt from attending classes and taking exams. |
| 3.9. Candidates' rights and obligations are defined in relevant HEI regulations and a contract on studying that provides for a high level of supervisory and institutional support to the candidates. | Improvements are necessary Candidates' rights and obligations are described in detail in the "Postgraduate doctoral study in the area of engineering sciences, in the field of electrical engineering" and "Regulations on Postgraduate Doctoral Study Programmes". These documents are available online. Full-time students are required to teach 150 norm hours ± 20%, corresponding to 50% of their workload. Students report a teaching workload of up to 70% of their time, reducing their time spent towards research. The panel advises the HEI to establish a procedure to avoid excessive teaching workload of teaching assistants. |
| 3.10. There are institutional support mechanisms for candidates' successful progression. | High level of quality The HEI provides institutional support to the candidates through the postgraduate study programme bodies: Dean, Vice Dean, the Faculty Council, the Committee of Postgraduate Studies and Research, the Head of Postgraduate Doctoral Study Programme, the heads of modules and supervisors. Students are encouraged by their supervisors to attend and publish in relevant conferences, and publishing papers is a compulsory part of the doctoral study. |
| 4. PROGRAMME AND OUTCOMES | |
| 4.1. The content and quality of the doctoral programme are aligned with internationally recognized standards. | High level of quality The quality is assessed on the basis of the programme as it was delivered to the panel. The programme is of acceptable quality as it is research-oriented and focused on the candidate's independent work (it provides for at least three years of independent research experience, as regulated by the Croatian Qualifications Framework – CroQF). Teaching is included as required by the needs of candidate's research and enables the candidate to acquire generic skills and international experience. The programme is meeting an acceptable international standard of doctoral education in the relevant discipline as: |

| 4.3. Programme learning outcomes are logically and clearly connected with teaching | High level of quality SER and interviews with candidates (and alumni) demonstrated |
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| 4.2. Programme learning outcomes, as well as the learning outcomes within it, are aligned with the level 8.2 of the CroQF. They clearly describe the competencies the candidates will develop during the doctoral programme, including the ethical requirements of doing research. | High level of quality Although the programme meets the CroQF level 8.2 by quality descriptions the programme has no learning outcomes defined. The reaccreditation panel assessed that the following skills and competencies are acquired: Research competencies (interviews with candidates, review of programme description and submitted theses demonstrated the quality of acquired research competencies, such as collecting information and sources, critical reading and identifying biases, etc.); Project planning and management competencies (developing research proposals, organising research, timely identification of potential issues and budgeting); Competencies in research methodologies (using relevant hardware and software, statistical analyses, statistical inference, making conclusions based on quantitative data); Reading and writing skills (speaking and listening, presenting data and conclusions to non-experts); Teaching and assessment skills; Competence in demonstrating individual professional and ethical authority; Readiness to accept ethical and social responsibility for performing research successfully, delivering socially useful research results and readiness to face new social and economic challenges. However, we encourage that the programme uses the learning outcome methodology to monitor candidates' and teachers'/supervisors' success in achieving the stated competences. |
| | The programme – and the programme content – is comparable to programmes at international HEIs, with respect to programme objectives, admission criteria, admission procedures, programme duration, specialisations, volume of teaching and the ratio between teaching and research, number of compulsory and elective courses; There are comparable supervision procedures; There is comparability of thesis formats and assessment committees, however, it might be advantageous for students, in particular those employed by industry to prepare a thesis based on papers presented and submitted at conferences and in journals; There is comparability with international HEIs in complying with national and international professional standards. The programme should strive for a higher degree of interdisciplinary, in particular in cooperation with the naval programme and other engineering programmes at the University. |

| contents, as well as the contents included in supervision and research. | that learning outcomes are logical and aligned with individual courses, supervisory work and research (acceptable level of quality) but we encourage the programme to use the learning outcome methodology to monitor its quality. |
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| 4.4. The doctoral programme ensures the achievement of learning outcomes and competencies aligned with the level 8.2 of the CroQF. | High level of qualityThe quality and level of achieved learning outcomes wasassessed as the level 8.2 of the CroQF. The reaccreditation panelassessed the programme and its quality assurance procedures,and checked that the programme enables candidates to acquirecompetencies at the level 8.2.As no thesis has been defended as per date in this programme, nosample thesis was provided for review by the panel.The programme, however, submitted:-A sample of candidates' publications;-A sample of seminar papers, conference presentations, etc. |
| 4.5. Teaching methods (and ECTS, if applicable) are appropriate for level 8.2 of the CroQF and assure achievement of clearly defined learning outcomes. | High level of quality The quality of teaching methods was assessed. A combination of a few courses delivered <i>ex-cathedra</i> and the majority of courses conducted as individual consultations, as well as colloquia, research, experimental or laboratory work, is satisfactory. The panel examined the programme and course structure and descriptions and assessed that the methods used (some <i>excathedra</i> teaching, individual work with the supervisor, discussion groups, workshops etc.) are appropriate for achieving the intended learning outcomes of courses. |
| 4.6. The programme enables acquisition of general (transferable) skills. | High level of qualityThe programme provides for the acquisition of generic(transferable) skills, e.g. through workshops or other forms ofsupport for the development of business and managerial skills,presentation, writing and project management skills, applying forfunding, etc.The HEI documented that candidates are informed ofopportunities to participate in internal and external trainingsand that the acquisition of these skills is assessed within theprogramme. The panel also noted an efficient collaboration withindustry. |
| 4.7. Teaching content is adapted to the needs of current and future research and candidates training (individual course plans, generic skills etc.). | academic needs and research plans |
| 4.8. The programme ensures quality through international connections and teacher and candidate mobility. | Improvements are necessary The programme is considered to be of acceptable quality as it strives to improve its quality through internationalisation and mobility: |

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| Internationalisation of the doctoral programme is achieved by providing opportunities for, and using research staff mobility; |
| - It systematically provides information on opportunities for candidate mobility (Erasmus + funding); |
| - The HEI is acquainted with the European Charter of Researchers and Code of Conduct and implements its principles. |
| Evidence for this criterion was presented: |
| Opportunities for candidates to study abroad (spend a part of their education on another, foreign HEI) and evidence that programme regulations enable and encourage that type of international mobility; |
| - Evidence on encouraging candidates to participate in international conferences (systematically informing them on important conferences, assisting in applying for travel funds etc.); |
| - Opportunities to write the thesis in a foreign language; |
| Following activities could improve the programme: |
| - Opportunities to replace the thesis by publication in internationally recognized outlets; |
| - Attract international faculty and excellent international candidates to the programme (or a part of it). |

* NOTE: RECOMMENDATIONS OF THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL AND QUALITY LABEL

The role of the Expert Panel in the re-accreditation of doctoral study programmes is manifold. The Expert Panel or part of the Expert Panel visiting a higher education institution drafts a report on the basis of a self-evaluation report, the accompanying relevant documentation, and a site visit to HEI. The draft report is adopted by all members of the Cluster Expert Panel, while the president of the Cluster Expert Panel is responsible for coordinating the assessment levels.

The report contains an assessment on whether a doctoral study programme delivered at a higher education institution complies with the prescribed laws and by-laws, as well as any additional/recommended requirements defined by the Agency's Accreditation Council, and whether a higher education institution can obtain a positive, i.e. satisfactory quality assessment according to the criteria set out in this document. Moreover, the Expert Panel must make recommendations for quality improvement.

Based on the assessment of all these elements, the Expert Panel may propose to the Accreditation Council of the Agency to issue either a confirmation on compliance, a letter of expectation for the period up to three (3) years in which period the higher education institution should eliminate the identified deficiencies, or to deny the license.

If the Expert Panel has assessed that a doctoral study programme delivered by a higher education institution does not meet legal and other requirements or that the quality of a study programme is not ensured (i.e. that HEI does not meet additional requirements or recommendations made by the Accreditation Council, or has a very poor quality assessment), they should propose to the Accreditation Council to deny the license.

If the Expert Panel considers that the relevant laws and bylaws have been met by a higher education institution, but that certain elements mentioned above do not meet the quality requirements, while they consider that the identified shortcomings can be corrected within a time frame of three years, they should issue a letter of expectation.

If the Expert Panel considers that all legal and additional/recommended requirements have been met and the quality assessment is satisfactory, i.e. that a study programme fulfils the learning outcomes appropriately defined for that level and scientific area, they may propose the issuance of a certificate and have a HEI commit to quality improvement and reporting to the Agency during the follow-up period.

Finally, if the Expert Panel has, in accordance with the criteria mentioned above, proposed issuing the certificate of compliance and assessed that, in addition to meeting the minimum quality requirements – i.e. the qualification framework level - for a study programme, the programme should be identified as a doctoral programme of a 'high level of quality', the Expert Panel may propose to the Agency's Accreditation Council that such a doctoral study programme be awarded the 'high quality label'. Thus the Agency, with the consent of the Accreditation Council, grants a higher education institution the right to use the label for their academic and promotional purposes.

The 'high quality label' cannot be proposed or awarded to a programme or a higher education institution that does not comply with the requirements laid down by the laws and bylaws mentioned in this document, and any additional requirements recommended by the Accreditation Council. Moreover, the quality assessment awarded to a study programme should reflect a high level of quality inasmuch that at least half of the sub-criteria in each of the quality assessment criteria are assessed as being of high quality. The Accreditation Council of the Agency issues a final opinion on the label awarded. The content and form of the quality labels shall be prescribed by the Agency in a relevant general act.

The Accreditation Council of the Agency discusses the final report with all recommendations and suggestions, and issues their opinion on the report. Based on a prior opinion of the Accreditation Council, the Agency issues an Accreditation Recommendation to the minister responsible for science and higher education, and upon receipt of the minister's final decision on the outcome of the procedure, awards the 'high quality label" to a higher education institution.