Agency for Science and Higher Education

REACCREDITATION OF POSTGRADUATE UNIVERSITY STUDY PROGRAMMES IN CROATIA: PRINCIPLES AND CRITERIA

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I PURPOSE, OBJECTIVES AND BASIC PRINCIPLES

The reports of expert panels in external reviews of Croatian higher education institutions implemented by the Agency for Science and Higher Education (ASHE) between 2010 and 2014 listed a number of issues connected with doctoral training as it is delivered in Croatia. This prompted ASHE to conduct a thematic review of doctoral study programmes in 2013. The report produced within the review, available on the ASHE website, confirmed the existence of the issues partly identified within the reaccreditation procedure, calling for a comprehensive reform of doctoral study programmes in Croatia.

In 2013 Croatia passed the Act on the Croatian Qualifications Framework (CroQF) aimed at improving the quality of education in Croatia and connecting Croatian qualifications with European. According to the Act, doctoral qualification represents the highest level of the Framework, 8.2, which can be acquired by completing "postgraduate university (doctoral) studies (*poslijediplomski sveučilišni (doktorski) studij*); defence of a doctoral thesis (viva) not involving a taught study programme (*obrana doktorske disertacije izvan studija*)." Descriptors of learning outcomes for this level are:
- knowledge - creating and evaluating new facts, concepts, procedures, principles and theories in a field of research that extends the frontier of knowledge;
- cognitive skills - using advanced, complex, original, highly specialized knowledge, skills, activities and procedures required for developing new knowledge and new methods as well as for integrating different fields;
- practical skills - creating, evaluating and performing new proposed specialized activities and new methods, instruments, tools and materials;
- social skills - creating and applying new social and generally acceptable forms of communication and cooperation in interaction with individuals and groups of different affiliations and different cultural and ethnical origin;
- autonomy - demonstrating personal, professional and ethical authority, managing scientific research activities and a commitment to development of new ideas and/or processes;
- responsibility - taking ethical and social responsibility for successful execution of research, socially beneficial results and potential social consequences.

Inclusion in CroQF is voluntary and it is meant to serve as a "reform" framework - it is assumed that a number of study programmes are currently not able to offer achievement of necessary learning outcomes, which is to be confirmed by an independent review preceding a programme's inclusion in the Framework.

The Croatian 2020 Strategy for Education, Science and Technology, adopted in 2014, lists among its objectives the implementation of the European University Association (EUA) Salzburg Principles through a number of measures, including the "establishment of international joint and national doctoral schools with the research component amounting to at least 80%, based on the existing quality doctoral programmes" (measure 2.5) and "joint supervisions" (measure 3.1). Within the objective 2 ("Internationally competitive public universities and research institutes in the Croatian higher education and research area which create new scientific, social, cultural and economic value"), the Strategy calls for quality improvements in the research and higher education system, such as changes in the procedure of appointment to scientific titles and the procedure of awarding projects, but also improved cooperation with the world of business, with a significant increase in funding as a precondition for quality improvement at all levels of higher education, including doctoral training. The Strategy also foresees a change in the way programmes are funded, individually as well as at the level of the system, calling for an increase in the offer of scholarships and stipends for academic mobility, also at the doctoral level.

Thus, when discussing doctoral study programmes in Croatia, the conclusions of the thematic review of these programmes, the demands of the CroQF and strategic goals all point to a need to:
- ensure that all doctoral programmes are aligned with the legal framework;

- adapt the number of enrolled students to available resources at higher education institutions, primarily with regard to the number of qualified mentors and research projects;
- ensure that quality assurance of all doctoral programmes is comprehensive, aligned with the Standards and guidelines for quality assurance in the European Higher Education Area and European University Association recommendations;
- ensure that all doctoral candidates in Croatia have the opportunity to graduate on time and achieve learning outcomes at the level 8.2 of the CroQF.

These four mutually connected aims lead to the four goals of the reaccreditation of doctoral study programmes:
1. accredit only those programmes that comply with the existing legal preconditions;
2. provide higher education institutions with a review of quality assurance and comprehensive performance indicators at the doctoral level (adequateness of resources for existing and prospective candidates, completion rates, employability, mobility), and recommendations and target dates for improvements;
3. check if higher education institutions are able to guarantee achievement of learning outcomes at a satisfactory level of CroQF, and provide recommendations and target dates for improvements;
4. identify high-quality doctoral programmes.

In the reaccreditation procedure ASHE will be guided by the following principles:
- participatory adoption of quality criteria
- equality of institutions
- independence and objectivity (of panels and reports)
- protecting data and publishing reports
- using international standards and criteria.

PARTICIPATORY ADOPTION OF QUALITY CRITERIA

During 2015 stakeholder consultations on criteria for quality of doctoral programmes, ASHE invited the stakeholders in the system of higher education and science to appoint representatives in a working group which was to develop the quality criteria. All public universities appointed their representatives, mostly vice-rectors for research, but also other representatives with competences in quality assurance of doctoral programmes. The working group also included representatives of public scientific institutes, an organisation of doctoral candidates and young researchers (MLAZ) and ASHE Accreditation Council. Stakeholder consultations also included an open public discussion, with all suggestions coming from the public presented to the working group and included in the documents if accepted. The working group agreed on the final version of this document and delivered it to ASHE. That version was then adopted by the Accreditation Council, ASHE advisory and expert body, at its 69th session.

II. REACCREDITATION PROCEDURE

In line with the Quality Assurance in Science and Higher Education Act (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), ASHE reaccredits higher education institutions and their study programmes. The reaccreditation of doctoral study programmes is defined by law as a reaccreditation of a part of higher education activity of the institutions. ASHE implements the procedures following an annual plan, and procedures can also be launched upon request of an institution or the competent minister. Thus the standard reaccreditation rules of procedure apply (Procedure). The procedure is divided into the following steps:
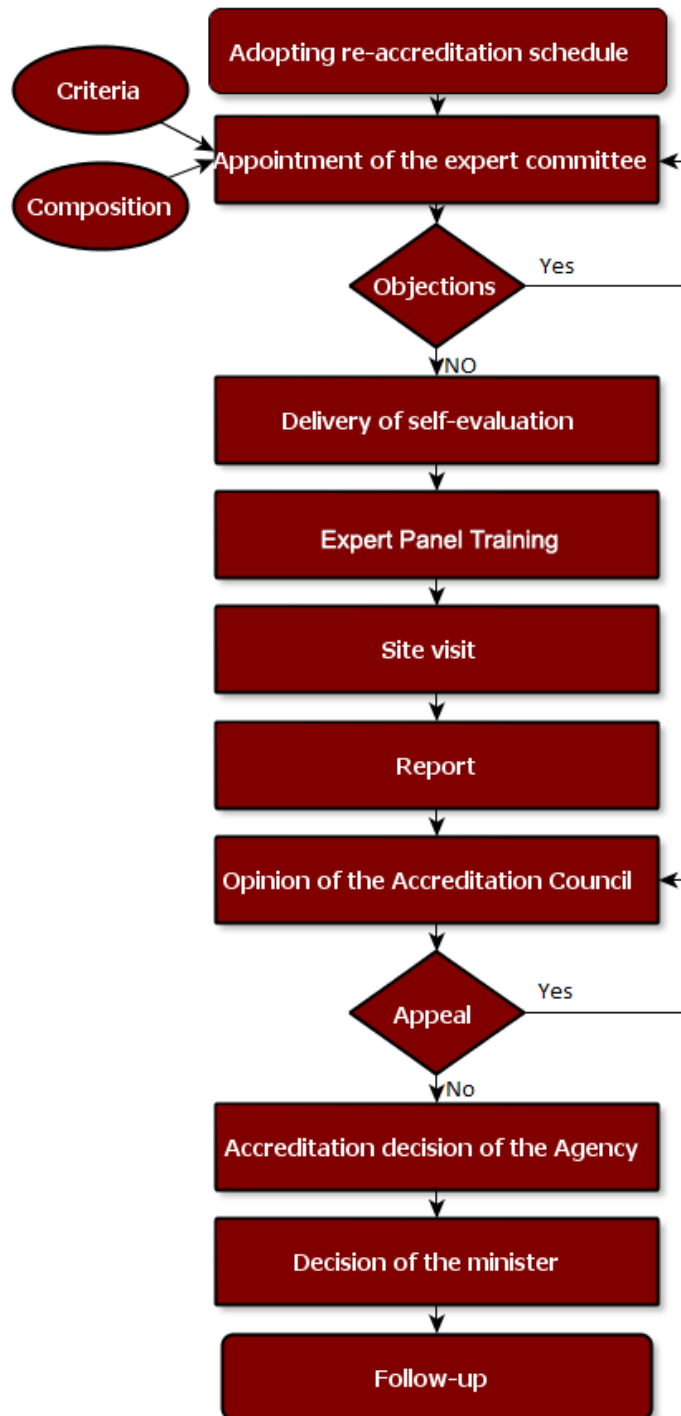
The procedure will take into account previous external evaluations, particularly the outcomes and recommendations of 2011-15 reaccreditation of Croatian higher education institutions. The recommendations of the two reaccreditations are to be aligned.

III. AGENCY FOR SCIENCE AND HIGHER EDUCATION FRAMEWORK FOR ASSESSING THE QUALITY OF DOCTORAL STUDY PROGRAMMES

The primary goal of this reaccreditation of doctoral study programmes is to ensure that the higher education qualifications that award the academic title "doctor of science" (PhD) reflect study programmes of high quality, internationally comparable and aligned with minimal legal conditions. Through this quality assurance procedure, ASHE ensures that Croatian doctoral programmes - and the qualifications they offer - satisfy domestic and international threshold criteria of academic quality. The procedure thus includes a check of compliance with minimal legal conditions and an independent review based on quality criteria. Minimal legal conditions are supplemented with additional conditions recommended by the ASHE Accreditation Council in consultations with public universities, in order to clarify or supplement the legal framework.

Minimal legal conditions

1. In order to deliver a doctoral study programme, each higher education institution (HEI) has to be listed in the Register of Scientific Organisations in the scientific area of the programme, and have an accreditation for performing higher education activities and a license for performing a scientific activity (positive reaccreditation decision).

2. HEI (or HEIs for joint programmes) has to deliver 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 employ 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) as well as researchers, as defined by Article 7 of the Ordinance on the Content of a Licence and Conditions for Issuing a Licence for Performing Scientific Activity Re-Accreditation of Scientific Institutions (OG 83/2010).

3. In line with the Ordinance (OG 24/10) at least 50% of teaching as expressed in norm-hours has to be delivered by teachers employed at the HEI (full-time, elected into scientific-teaching titles).

4. Teacher: student ratio at the HEI has to be in line with the Ordinance (OG 24/10) i.e. below 1: 30.

5. Pursuant to Article 83 Paragraph 12 of the Act on Scientific Activity and Higher Education (OG 139/13), HEI, when this does not violate the regulations of the Copyright Act, permanently publishes doctoral theses on the National University Library public website, and ensures that one hard copy of the thesis is archived in the Library.

6. According to the Article 82 Subsections 3 and 4 of the Act on Scientific Activity and Higher Education (OG 139/13), HEI needs to launch the procedure of revoking the academic title ("if it has been determined that they have been attained contrary to the conditions stipulated for their 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") in line with the relevant regulations ("according to provisions of the statute or enactments of a higher education institution where an academic or professional title has been attained").

Additional/ recommended conditions of the ASHE Accreditation Council for passing a positive opinion

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.

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).

3. The doctoral programme is aligned with the HEI's research strategy.

4. The candidate: supervisor ratio at the HEI is not above 3:1.

5. Conditions for supervisors:

    a) PhD, elected into a scientific title, holds a scientific or a scientific-teaching position 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, Supervisors and candidates);

    c) confirms feasibility of the draft research plan upon admission of the candidate (or submission of the proposal);

    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, collaborator or in other ways;

    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.

6. Conditions for teachers:

    a) holds a scientific or a scientific-teaching position;

    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.

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.

9. It is recommended that for joint programmes and doctoral schools (at the university level):

    a) cooperation between HEIs is based on adequate contracts;

    b) joint programmes are internationally recognized, and delivered in cooperation with accredited HEIs;

    c) 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);

    d) at least 80% of courses are delivered by teachers employed at HEIs within the consortium.

IV. CRITERIA FOR ASSESSING QUALITY WITH EXPLANATIONS

The criteria for assessing quality are supplemented with explanations in the middle column. Their purpose is primarily to help higher education institutions (HEIs) in self-evaluating their doctoral study programmes and drafting a self-evaluation report (SER). HEIs are to self-evaluate each doctoral study programme separately, focusing on the various aspects of quality assurance and freely choosing the content they wish to present in the SER. The explanations of the criteria are also meant to guide the reaccreditation expert panels in drafting the final report, which is why we recommend that SER comments on each of the criteria in order to provide the panel with sufficient information to pass an opinion. SER can have up to 50 pages.

1. RESOURCES: TEACHERS, SUPERVISORS, RESEARCH CAPACITIES AND INFRASTRUCTURE	Explanations of the criteria and guidelines for self-evaluation	High level of quality/ improvements necessary
1.1. HEI is distinguished by its scientific/ artistic achievements in the discipline in which the doctoral study programme is delivered.	SER discusses scientific (or artistic) reputation of the study programme (programme management, supervisors and teachers/researchers, as well as alumni) at the local and international level. This can include a discussion of the impact of faculty publications in the past five years (which can be listed in a table, annexed to SER or linked in it), of the quality and quantity of the publications according to the criteria relevant for the programme field and discipline, of achievements in national and international research cooperation, programmes and projects, of participation in scientific centres of excellence, of organizing various national and international research fora, and other achievements in the relevant area of specialisation (knowledge or technology transfer, publications specific for the field etc.).	
1.2. The number and workload of teachers involved in the study programme ensure quality doctoral education.	A programme will be considered to be of high quality if at least 50% is delivered by its own faculty, with appropriate attention given to their total teaching workload.	
1.3. The teachers are highly qualified researchers who actively engage with the topics they teach providing a quality doctoral programme.	A programme will be considered to be of high quality if its faculty have a high number of scientific publications relevant for the programme area and field.	
1.4. The number of supervisors and their qualifications provide for quality in producing the doctoral thesis.	A programme will be considered to be of high quality if it employs a sufficient number of quality supervisors (with candidate: supervisor ratio below 3:1) with a number of high quality publications relevant for the programme area and field. The supervisor is expected to actively lead and/or	

	participate in international and/or national scientific research projects. Supervisor's performance is also assessed on the basis of the performance of the candidates (and their publications coming out of doctoral research) and their completion rates.	
1.5. The HEI has developed methods of assessing the qualifications and competencies of teachers and supervisors.	A programme will be considered to be of high quality if it has established and developed formal mechanisms of assessing and monitoring the qualifications and competencies of teachers and supervisors, based on research excellence.	
1.6. The HEI has access to high-quality resources for research, as required by the programme discipline.	A programme will be considered to be of high quality if it provides the candidates with state-of-the-art research infrastructure (as appropriate for the programme area, i.e. with modern equipment and laboratories, or quality library resources, access to relevant databases etc.).	
2. INTERNAL QUALITY ASSURANCE OF THE PROGRAMME	**Explanations of the criteria and guidelines for self-evaluation**	**High level of quality/ improvements necessary**
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.	The SER discusses the needs identified prior to launching the programme (it explains the reasons to launch the programme, i.e. scientific/ artistic, cultural, social, economic and other needs identified.) A programme will be considered to be of high quality if the HEI has established regulations on launching and approving doctoral programmes. The programme has been launched and approved in line with the regulations. The programme justification was documented, and included a thorough analysis of social, academic, economic or other needs of the community.	
2.2. The programme is aligned with the HEI research mission and vision, i.e. research strategy.	A programme will be considered to be of high quality if it is aligned with a quality research strategy, as well as the HEI development strategy. Research foundations of doctoral education are assessed along with the quality of the research strategy. A research strategy is supposed to demonstrate the HEI's research focus and potentials (of which the SER includes a summary), and the SER needs to discuss the ways in which the programme content, choice of candidates and supervisors etc. are aligned with these.	
2.3. The HEI systematically monitors the success of the programmes through periodic reviews, and implements improvements.	High quality will normally be based on established mechanisms for periodically reviewing and improving the quality of the doctoral programme (ordinances, guidelines, procedures, well established practices etc.). Such mechanisms include the following: - periodical international and/or national programme	

	reviews; - continuous monitoring and analyses of research productivity of supervisors and candidates; - collecting and analysing feedback from candidates, alumni and drop-outs, especially concerning the supervision system and the support provided by the HEI, or reasons to drop out; - collecting and analysing feedback from other stakeholders (e.g. employers); - evidence on changes implemented on the basis of these procedures.	
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.	The quality of supervision is assessed using the documents meant to ensure it, as described in the SER and as presented during the site visit. The SER should present the quality of supervision, also discussing: - the candidates' research performance (table 2, or additional lists and analyses of publications); - feedback from current and former candidates; - completion rates; - documents, procedures and practices of changing supervisors and mediating in case of problems between a supervisor and a candidate; - documents, procedures and practices of awarding successful supervisors, etc. A programme will be considered to be of high quality when the above described mechanisms of monitoring and improving the quality of supervision exist.	
2.5. HEI assures academic integrity and freedom.	HEI has procedures that assure academic integrity (prevent plagiarism and other forms of academic fraud) and freedom of research.	
2.6. The process of developing and defending the thesis proposal is transparent and objective, and includes a public presentation.	A programme will be considered to be of high quality if it: - has developed the procedures of producing and defending the doctoral thesis proposal (as described in an ordinance, or some other document); - forms a committee, at least one member of which is external (from another institution); - has published a detailed proposal defence protocol (to be made available to the reaccreditation panel); - has created and published proposal templates and clear presentation guidelines (both to be made available to the reaccreditation panel;	

	- has created and published templates for proposal assessment (to be made available to the reaccreditation panel as attachment to SER or during the site visit); * Five thesis proposals from the past five years should be attached to the SER. * Signed assessment templates should be attached to these five proposals.	
2.7. Thesis assessment results from a scientifically sound assessment of an independent committee.	A programme/HEI will be considered to be of high quality if it: - has developed the procedures of developing and defending the doctoral thesis (as described in an ordinance, or some other document); - encourages participation of external or international examiners in the thesis defence committee (viva assessment committee)(SER should explain how this is done and note the number of theses which were defended in front of and assessed by a committee with external or international members); - encourages candidates to have at least one publication with an internationally competitive peer-review in the field of thesis, prior to completion of doctoral education (SER should explain how this is done and note the number of such reviews in the past five years); - accepts a variety of formats for the theses (SER should list the types of theses accepted and their numbers in the past five years); - has created and published thesis guidelines (to be made available to the reaccreditation panel as attachment to the SER or during the site visit); - has created and published thesis assessment guidelines (to be made available to the reaccreditation panel as attachment to the SER or during the site visit); - has created and published a detailed thesis defence (viva) protocol (to be made available to the reaccreditation panel as attachment to the SER or during the site visit); - has developed and published a template for recording the thesis defence (viva) (to be made available to the reaccreditation panel as attachment to the SER or during the site visit). * Five theses from the past five years should be attached to the SER. * Five thesis defence records from the past five years should be attached to the SER.	
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.		
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).	The SER explains what tuition fees are spent on, and the panel checks if this complies with the regulations on using own and dedicated funds, i.e., to insure further development of the doctoral programme. A programme will be considered to be of high quality if it has established a system of funding the programme and the candidates within the institution. The HEI secures funding, applies to calls for co-funding doctoral programmes, establishes partnerships and finds other sources of (candidates') research funding useful for solving social, scientific or economic challenges. The HEI secures funding for the candidates' research and research results' dissemination costs.	
2.10. Tuition fees are determined on the basis of transparent criteria (and real costs of studying).	The HEI explains the amount of the tuition fee when discussing the costs of studying.	
3. SUPPORT TO DOCTORAL CANDIDATES AND THEIR PROGRESSION	**Explanations of the criteria and guidelines for self-evaluation**	**High level of quality/ improvements necessary**
3.1. The HEI establishes admission quotas with respect to its teaching and supervision capacities.	The HEI/ programme provides for a high quality admission policy, systematically taking into account: - the number of available supervisors and their teaching workload; - quality of supervisors - if their competencies suit the candidates' research proposals; - the number of candidates a teacher already supervises, with no more than 3 candidates per supervisor on the programme as a whole; - teaching workload of supervisors, which should not exceed the existing legal thresholds. The HEI also needs to prove that it clearly defines the obligations of supervisors and co-supervisors, candidates and research teams.	
3.2. The HEI establishes admission quotas on the basis of scientific/ artistic, cultural, social, economic	The HEI has to discuss the admission quotas with respect to the needs of the society and the academia, while taking into account the number of students expected to complete the	

and other needs.	programme (as based on the average completion rate). A programme/HEI will be considered to be of high quality if its admission quotas are shown to be based on wider scientific/ artistic, cultural, social and economic needs. HEIs can show this by discussing some of the following: - the number of unemployed PhDs; - the number of PhDs employed in research and development positions in the public and private sector; - the number of innovative companies established by PhDs (if applicable); - the number of knowledge transfer projects, prototypes and other forms of intellectual property (if applicable); - the number of research projects with businesses, HEIs and public research institutes, serving as a basis for a part of the admission quota, etc.	
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.	The funds for candidates' research provided through these will be assessed in relation to the number of candidates and the share of project and other types of funding in financing the programme (with the exception of self-funded candidates). A programme/HEI will be considered to be of high quality if the admitted candidates (their doctoral research) are fully funded or co-funded by research projects, economy or some other public source (funding from third parties, such as employers, should be based on contracts guaranteeing and defining the type of support provided).	
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.		
3.5. The HEI ensures that interested, talented and highly motivated candidates are recruited internationally.	The HEI describes the ways in which it ensures that the best prospective applicants learn of opportunities to apply. A programme will be considered to be of high quality if it admits the best undergraduate and graduate students leaning towards a career in research, with the call for applications published also internationally, and the best applicants admitted.	
3.6. The selection process is public	The HEI describes the ways in which it ensures that the best	

and based on choosing the best applicants.	applicants are admitted and presents the mechanisms of identifying them (e.g. interviews, applicants' project proposals and individual work plans for three years, etc.). A programme will be considered to be of high quality if it publishes the call for applications in a timely manner, if the criteria for selection of applicants include past performance, demonstrated interest in artistic or scientific research, publications, recommendations by teachers and a prospective supervisor, and a research proposal. An interview with the applicant is a compulsory part of the selection procedure.	
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.	The HEI ensures that the selection is clear and that applicants have a right to complain. The selection procedure is documented and the list of admitted applicants is public. There is a time limit for complaints and responses to complaints. The applicants who were not admitted have a right to review the strengths and weaknesses of their application and, possibly, receive guidelines to improve their research plans.	
3.8. There is a possibility to recognize applicants' and candidates' prior learning.	The HEI has established a quality procedure (e.g. has an ordinance) of recognizing prior learning and achievements relevant for the doctoral programme, e.g. recognition of ECTS from a master or another doctoral programme (began, or completed), publications etc., as well as non-formal and informal learning. The procedure is launched upon applicant's request, and based on clear criteria/ procedures.	
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.	A programme/HEI will be considered to be of high quality if it has an effective ordinance (or some other kind of quality assurance procedure) on the doctoral programme (to be attached to the SER) which ensures a high level of institutional as well as supervisory support to the candidates. A part of the ordinance (or some other kind of quality assurance procedure) describes candidates' rights and obligations in detail (the SER needs to describe the relevant chapters in detail, including the ways in which support is provided). Candidates are informed on all of their rights and obligations upon admission (explain the way in which it is ensured that they are informed in a timely manner). The HEI has a contract on studying which is signed by each candidate (attach the contract template, i.e. a sample of the contract signed by candidates in the past five-year period).	
3.10. There are institutional support mechanisms for candidates' successful progression.	A programme/HEI will be considered to be of high quality if it offers comprehensive institutional support to the candidates in their research and career development, with support mechanisms elaborated in detail. The HEI should explain the relevant ordinance articles in detail, list examples of their implementation in the past five-year period and comment on the support measures improved in that period. For example: - state the number of candidates' publications which have	

	received institutional support in line with the ordinance; - state the number of international conferences and the candidates presenting there with the help of institutional support; - state the number of candidates whose research was directly funded by the institution, and elaborate on the source of funds used (institutional support funding, institutional/ departmental research projects, cooperation with businesses, etc.).	
4. PROGRAMME AND OUTCOMES	**Explanations of the criteria and guidelines for self-evaluation**	**High level of quality/ improvements necessary**
4.1. The content and quality of the doctoral programme are aligned with internationally recognized standards.	The quality is assessed on the basis of the programme as it is delivered to the panel. A programme will be considered to be of high quality if 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 (the content can vary) and enables the candidate to acquire generic (transferable) skills and international experience. The HEI explains the methods and procedures of meeting international standards of doctoral education in the relevant discipline by comparing the programme to those of international HEIs in the following features: - programme - and programme content - comparability to programmes at international HEIs, i.e. comparability of 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; - comparability of supervision procedures; - comparability of thesis formats and assessment committees; - comparability with international HEIs in complying with national and international professional standards. Where applicable, a programme will be considered to be of high quality if it provides for interdisciplinarity, i.e. provides opportunities to develop and implement interdisciplinary research. An interdisciplinary research proposal is to be attached together with the list of co-supervisors and teachers from other scientific fields and disciplines etc.	
4.2. Programme learning outcomes, as well as the learning outcomes	The reaccreditation panel assesses the quality of intended learning outcomes, especially regarding the teaching	

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.	component of the programme, e.g. if the learning outcomes lead to the level 8.2 of the CroQF or if they are more appropriate for level 7 or lower levels. A high quality programme should have its learning outcomes well described (course objectives, intended outcomes, content, teaching and learning methods - including independent learning and research) so that it can assure and monitor the achievement of intended learning outcomes and candidates' obligations (assessment procedures), successful performance of teachers and supervisors and quality in general. In addition to research competencies, the programme also provides for competencies in research ethics. The HEI needs to prove that its programme meets the CroQF level 8.2 by quality descriptions of the programme learning outcomes. The reaccreditation panel assesses if the following skills and competencies are acquired: - specific research competencies (interviews with candidates, programme description and submitted theses demonstrate the quality of acquired research competencies, such as collecting information and sources, critical reading and identifying biases, interviewing skills, construction of measuring instruments etc.); - project planning and management competencies (developing research proposals, organising research, timely identification of potential issues, budgeting, leading a research group); - competencies in research methodologies i.e. inference (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 as well as potential social impact, readiness to face new social and economic challenges.	
4.3. Programme learning outcomes are logically and clearly connected with teaching contents, as well as the contents included in supervision and research.	SER and interviews with candidates (and alumni) demonstrate if learning outcomes are: - logically and clearly aligned with individual courses, supervisory work and research (high level of quality) or - partly or insufficiently aligned with individual courses,	

	supervisory work and research.	
4.4. The doctoral programme ensures the achievement of learning outcomes and competencies aligned with the level 8.2 of the CroQF.	The quality and level of achieved learning outcomes is assessed (level 8.2 of the CroQF.) The reaccreditation panel assesses the programme, its quality assurance procedures and a sample of theses, and checks if the programme enables candidates to acquire competencies at the level 8.2 through reviewing the submitted theses (theses are of high quality, which proves that programme learning outcomes are achieved). The programme submits: - a sample of theses; - a sample of candidates' publications (especially high-impact publications coming out of doctoral research); - 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.	The quality of teaching methods is assessed, e.g. if courses are delivered *ex-cathedra* or using methods more appropriate for developing individual research skills, such as colloquia, research, experimental or laboratory work and connected teaching methods, methodological workshops etc., which will be regarded as a high level of quality. The panel will look at programme and course structure and descriptions to assess if the methods used (*ex-cathedra* teaching, individual work with the supervisor, discussion groups, workshops etc.) are appropriate for achieving intended learning outcomes.	
4.6. The programme enables acquisition of general (transferable) skills.	A programme will be considered to be of high quality if it provides for acquisition of generic (transferable) skills, e.g. through workshops or other forms of support for development of business and managerial skills, presentation, writing and project management skills, applying for funding etc. HEI can also offer such skills outside the programme (e.g. within doctoral schools or through workshops organised at the university level, or offered by other institutions). The HEI has to prove that candidates are informed of opportunities to participate in such trainings and that the acquisition of these skills is assessed within the programme (state the number of ECTS awarded, if applicable).	
4.7. Teaching content is adapted to the needs of current and future research and candidates' training (individual course plans, generic skills etc.).	Courses delivered are flexible and adapted to individual academic needs and research plans. The HEI uses examples and/or programme structure to demonstrate that teaching is individualised and adapted to candidates' research plans. *Attach candidates' individual annual research plans.	
4.8. The programme ensures quality through international	A programme will be considered to be of high quality if it improves its quality through internationalisation and mobility,	

connections and teacher and candidate mobility.	on the basis of the following: - 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, encourages and achieves it; - ensures means to attract and attracts international faculty and excellent candidates to the programme (or a part of it); - the HEI is acquainted with the European Charter of Researchers and Code of Conduct and implements its principles. Evidence for this criterion can include: - attached contracts on international cooperation in delivering a part of the programme; - lists of supervisors and teachers from foreign HEIs who participate in the doctoral programme; - attached international reviews of the programme, if they exist; - evidence on 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 (through awarding ECTS points, systematically informing them on important conferences, providing travel funds etc.); - opportunities to write the thesis in a foreign language; - opportunities to replace the thesis by publication in internationally recognized outlets; - list of research collaborations with foreign HEIs and their benefits for the candidates.	

V. TABLES AND METHODOLOGY OF THE REVIEW

Tables for data submission

In addition to the SER which is drafted for each programme individually following the above criteria and explanations, HEIs need to fill in and submit the attached tables focusing on the past five-year period and check the accuracy of data in the MOZVAG information system as well as individual data on their researchers in the CROSBI information system.

Table 1 Teaching Staff

Teacher (name and surname/ institution*) and link to CROSBI database**	Scientific (or scientific-teaching) title and area/field of election	A	B	C	Course (and course type) within the programme and total workload	Workload in norm-hours***
Teacher 1					Course 1 (seminar)	20
					Course 2 (lecture)	40
					(…)	(…)
					Workload in 1st and 2nd cycle	320
					Workload at other HEIs	60
					Total workload	440

* State only for those coming from other institutions.

** Or some other database showing accurate data on publications and other research results.

*** Workload expressed in norm hours at all three cycles of higher education and other HEIs.

A = number of publications (books, journal articles etc.) relevant for the area/field, according to the Ordinance on Election into Scientific Titles, in the past five years (CROSBI has to be updated to provide accurate information).

B = number of citations, if applicable, and the source of this information (e.g. WoS, Scopus, Google Scholar).

C = *h*-index (if applicable; also state the source of this information).

Table 2 Supervisors and candidates

Supervisor (name and surname/ institution*) and link to CROSBI database**	Scientific (or scientific-teaching) title and area/field of election	Workload in norm-hours***	A	B	C	D	E	Candidate (initials) and research topic	F	G	Number of candidates graduating / not graduating on time (in the past five years)
Supervisor 1								Candidate 1/research topic			
								Candidate 2/research topic			
								Candidate 3/research topic			
								(…)			

* State only for those coming from other institutions.

** Or some other database showing accurate data on publications and other research results.

*** Total current workload expressed in norm hours at all three cycles of higher education (+ at other HEIs).

A = number of publications (books, journal articles etc.) relevant for the area/field, according to the Ordinance on Election into Scientific Titles, in the past five years (CROSBI has to be updated to provide accurate information).

B = number of citations of these, if applicable, and the source of this information (e.g. WoS, Scopus, Google Scholar).

C = *h*-index (if applicable; also state the source of this information).

D = number of international research projects led and/or participated in in the past five years.

E = number of domestic research projects led and/or participated in in the past five years.

F = number of publications coming out of doctoral research.

G = number of citations of these, if applicable, and the source of this information (e.g. WoS, Scopus, Google Scholar).

Additional documents

In addition to the SER and the tables, which are submitted in Croatian and English, HEI prepares:

1. a sample (no more than 10, no less than 5 per generation) of research proposals, theses and individual work plans of the candidates in the alphabetic order, in the past five year period, in Croatian and English (i.e. with English summaries/ abstracts)
2. strategic programme of scientific (or artistic) research in Croatian and English (or a summary in English);
3. relevant ordinances/ internal quality assurance documents (and other evidence it deems useful).

Discipline clusters

Reaccreditation plan will follow scientific areas, fields and disciplines i.e. will be based on clusters. That is to connect the reaccreditation with the field and discipline which provides resources for the programmes, and enable comparability between programmes in similar disciplines. A single panel will review all programmes, or as many as possible, in a cluster, so that a part of the panel (at least two members and a student) will visit each of the HEIs in a cluster. All HEIs within a cluster will be treated equally. After site visits, all panel members will adopt final quality marks on a common meeting, focusing on the comparability of marks and equality of criteria.

In appointing members of the expert panels, ASHE will strive towards finding excellent researchers, internationally recognized within their disciplines, but also experienced in quality assurance and higher education reviews, especially at the doctoral level. Each panel will be comprised of at least five members (with at least one foreign researcher, and one student/ doctoral candidate). ASHE will try to ensure that each panel has members experienced in reviewing journal articles (and other research outcomes) in the discipline, in quality assurance and management of doctoral programmes.

Training of panel members (informing them on Croatian higher education and research system) is to last longer than in other ASHE procedures, i.e. for two to three months, and is to be delivered on-line and in ASHE premises to improve the expertise of foreign, but also Croatian panel members.

A portion of documents and data relevant for the procedure will be prepared by ASHE using the existing databases (registers, MOZVAG, previous reviews etc.) to support the panels in making well-informed, quality decisions.