



ENSURING THE EXPERTISE TO GROW SOUTH AFRICA

Criteria and Processes for Recognition of Educational Qualifications for Professional Categories

E-17-PRO

Revision: 2: 23 October 2018

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DEFINITIONS


Engineering Discipline: A generally recognised, major subdivision of engineering such as the traditional disciplines of Chemical, Civil and Electrical Engineering; or a cross-disciplinary field of comparable breadth, including combinations of engineering fields, for example, Mechatronics; or the application of engineering in other fields, for example, Bio-Medical Engineering

Sub discipline: A generally recognised practice area or major subdivision within an engineering discipline, for example, Structural and Geotechnical Engineering within Civil Engineering

Substantial equivalence: (Applied to educational programmes) Two programmes, while not meeting a single set of criteria in detail, provide their respective graduates with knowledge and abilities to enable the graduates to undertake the same work and professional development

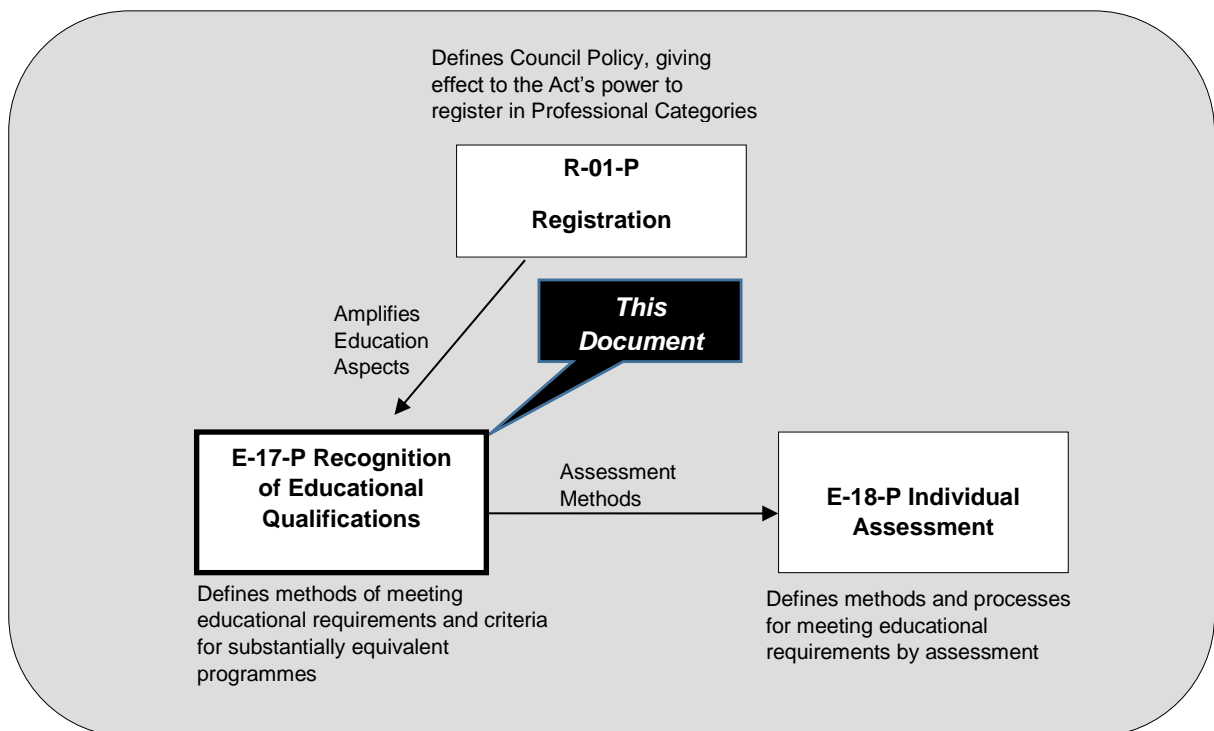
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BACKGROUND: THE ECSA REGISTRATION SYSTEM DOCUMENTS

The illustration below presents the documents that define the Engineering Council of South Africa (ECSA) system for the evaluation of qualifications. The illustration also locates the current document.



Documents defining the ECSA evaluation of qualifications

1. PURPOSE


This document defines the criteria and evaluation processes for the recognition of educational qualifications and the assessment of the level of educational achievement of applicants in candidate and professional categories.

The document is structured as follows:

Section 2 reviews the statutory requirements and policy for educational achievement for registration and the methods of satisfying the educational requirements thereof.

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Section 3 expands on the policy for holders of accredited qualifications or qualifications recognised under an international education agreement.

Section 4 details the evaluation of qualifications other than accredited or recognised qualifications and the evaluation of individual academic standing.

Section 5 describes practice in the case of applicants who do not meet the normal educational requirements.

Section 6 presents the composition of the interview and oral examination panel.

The document also lists the educational requirements for Candidate and Professional Certificated Engineers in Table 1 to Table 3 but does not cover the cases of applicants for registration via a Mutual Exemption Agreement or an International Registration Agreement.

This policy supersedes the document 'Recognition and Assessment of Academic Qualifications: Professional Engineers'.

2. BACKGROUND TO EDUCATIONAL REQUIREMENT FOR REGISTRATION


The Engineering Profession Act (No. 46 of 2000) requires that applicants who wish to register in a professional category or in a candidate category must satisfy Council that they have

- (a) demonstrated their competence as measured against standards determined by the Council for the relevant category of registration; and
- (b) passed any additional examinations and fulfilled any additional requirements that may be determined by Council.

The latter is referred to as the educational requirement for registration. The determination of standards by Council is embodied in the policy (document **R-01-P**). The various ways of meeting the educational requirements are summarised below.

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The educational requirement for registration as a candidate or a professional is normally an accredited qualification and other assessment or a qualification recognised under an international agreement. This policy provides further detail on meeting the requirements via accredited or recognised qualifications and other assessment methods. The current policy also defines the mechanism for meeting the educational requirements for registration as a candidate or a professional for persons without accredited or recognised qualifications.

The ECSA policy on registration (document **R-01-P**) recognises four methods for meeting the educational requirements prior to applying for candidate or professional registration in the applicable category. In the first and second methods, applicants satisfy the educational requirements if they


- (i) hold an accredited qualification or an acceptable combination of accredited qualifications prescribed for the category; or
- (ii) hold a qualification or a combination of qualifications recognised under an international academic agreement relevant to the category.

The third and fourth methods provide the means for an applicant to demonstrate educational standing that is substantially equivalent to an accredited qualification for the category of candidate or professional registration. The applicant must demonstrate one or more of the following:

- (iii) hold a qualification or a combination of qualifications that have been determined by case-by-case evaluation to satisfy criteria for substantial equivalence to an accredited qualification for the category by
 - (1) the qualification(s) being awarded in a jurisdiction or by a provider that has a record of quality or a quality assurance system known to the ECSA; or
 - (2) examination of detailed documentation on the qualification(s) reflecting substantial equivalence
- (iv) present a combination of evidence determined by Council for the category that indicates an individual level of educational achievement against criteria

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demonstrating that it is substantially equivalent to an accredited qualification.
Evidence may include

- (1) qualification(s) or credits towards qualifications not presented under (iii);
or
- (2) completion of examinations or other forms of assessment set or prescribed by Council; or
- (3) portfolio(s) of evidence of work and other outputs presented for assessment; or
- (4) other evidence of prior learning presented for assessment.

Detailed requirements for the various methods of satisfying the educational requirements are laid out in the subsequent sections.

3. IMPLEMENTATION OF POLICY FOR METHODS (i) and (ii)


3.1. To satisfy the educational requirements by method (i), the applicant must hold an accredited qualification or acceptable combination of accredited qualifications prescribed for the category. Qualifications accredited by the ECSA as meeting the educational requirements for a category are listed in the documents referred to below. A graduate is recognised as meeting the educational requirements for the category if he/she completed the programme in a year within the period of validity of the accreditation indicated in sections 3.1.1, 3.1.2 and 3.1.3 below. This provision applies to the following:

3.1.1. All BEng-type programmes in Lists A and B of document **E-20-PE** for Candidate or Professional Engineer applicants

3.1.2. All National Diploma programmes listed in document **E-20-PN** but contingent upon satisfying subject combinations specified in Section 3.2.1 for Candidate or Professional Engineering Technician applicants

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3.1.3. All BTech degree programmes listed in document **E-20-PT** but contingent upon satisfying subject combinations specified in Section 3.2.6 for Candidate or Professional Engineering Technologist applicants.

3.2. Recognition of accredited National Diplomas and the suite of qualifications in the new Higher Education Qualifications Framework (HEQSF) specified below in 3.2.1, 3.2.2, 3.2.3, 3.2.4 and 3.2.5 as meeting the educational requirements towards technician registration and recognition of an accredited BTech degree and the new HEQSF suite of qualifications listed below in 3.2.6, 3.2.6, 3.2.7, 3.2.8 and 3.2.9 as meeting the educational requirements towards technologist registration are contingent upon the subjects contained in the curriculum.

The criteria for an acceptable curriculum are as follows:

3.2.1. **National Diploma:** As required under NATED 151 and subject to variations permitted by the Education Committee (EC) from time to time

3.2.2. **Diploma in Engineering:** As required by document **E-02-PN**

3.2.3. **Diploma in Engineering Technology:** As required by document **E-08-PN**

3.2.4. **Advanced Certificate in Engineering:** As required by document **E-06-PN**

3.2.5. **Advanced Certificate in Engineering Technology:** As required by document **E-21-PN**

3.2.6. **BTech:** As required under NATED 151 with at least 0.625 NATED credits in engineering subjects relevant to the designation of the degree and subject to variations permitted by the EC from time to time


3.2.7. **BEng Tech:** As required by document **E-02-PT**

3.2.8. **Advanced Diploma in Engineering:** As required by document **E-08-PT**

3.2.9. **B Eng Tech (Hons):** As required by document **E-09-PT**

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Method (ii) recognised programme(s)

3.3. To satisfy the educational requirements, the applicant must hold a qualification or a combination of qualifications that is recognised by one of the following:

3.3.1. The Washington Accord: The international academic agreement relevant to the categories of Candidate and Professional Engineer

3.3.2. The Sydney Accord: The international academic agreement relevant to the categories of Candidate and Professional Engineering Technologist

3.3.3. The Dublin Accord: The international academic agreement relevant to the categories of Candidate and Professional Engineering Technician


3.4. The signatories to the various accords are identified on the International Engineering Alliance website (www.ieagreements.org). Each signatory maintains its list of accredited programmes. A graduate is recognised as meeting the educational requirements if he/she completed the programme in a year within the period of validity of the accreditation after the admission date of the signatory to the relevant accord.

3.5. Programmes accredited by organisations holding provisional status in an accord are not recognised by the ECSA. Applicants holding such qualifications must follow the qualification or individual evaluation methods (iii) or (iv) in clause 2.4 above.

3.6. In cases where a qualification or a combination of qualifications accredited by an accord signatory prior to the entry of the signatory to the accord is considered to be substantially equivalent to an accredited qualification, such qualifications must be listed as qualifications for accelerated processing provided for in Section 4.9.1.

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4. PROCESS AND CRITERIA FOR APPLICANTS UNDER METHODS (iii: QUALIFICATION EVALUATION) AND (iv: INDIVIDUAL ASSESSMENT)

4.1. An applicant for candidate or professional registration in a category who does not hold an accredited qualification or a recognised qualification must apply for educational evaluation before applying for registration.

4.2. The criteria for substantial equivalence to an accredited qualification for the category are defined in the following tables:

4.2.1. Table 1 for the categories of Candidate and Professional Engineer

4.2.2. Table 2 for the categories of Candidate and Professional Engineering Technologist

4.2.3. Table 3 for the categories of Candidate and Professional Engineering Technician

4.3. Recognition of educational achievement is granted for individual criteria for stated categories. Criteria may be satisfied by *one* of the following:

4.3.1. demonstrating compliance of qualifications with the qualifications evaluation (QE) criteria stated in tables 1, 2 or 3, column 2

4.3.2. assessing the applicant against the individual assessment (IA) criteria stated in tables 1, 2 or 3, column 3


4.4. After evaluation, a statement of full or partial recognition of educational achievement is issued to the applicant, stating the criteria satisfied and the relevant category for each criterion satisfied.

4.5. An applicant who seeks to meet the educational requirements by method (i), (ii) or (iii) and who provides evidence that he/she has been continuously in training and practice for ten years since graduation must be evaluated in terms of the policy **R-01-P**.

4.6 An applicant for educational evaluation who satisfies all the criteria for candidate registration is automatically registered as a candidate in that category. An applicant for educational evaluation who satisfies all criteria for professional registration in a category may apply for registration in that category providing that assessment against the following criteria

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may be deferred to the assessment of professional competence when applying for professional registration in the relevant category.

4.6.1. In the case of an applicant for Candidate and Professional Engineering Engineer, criteria 7 and 8 in Table 1 apply.

4.6.2. In the case of an applicant for Candidate and Professional Engineering Technologist, criteria 7 and 8 in Table 2 apply.

4.6.3. In the case of an applicant for Candidate and Professional Engineering Technician, criteria 7 and 8 in Table 3 apply.

4.7. An applicant retains the credits for criteria that have been satisfied in a particular category for three years after the date of notification for recognition of one or more credits that was notified to the applicant.

4.8. To obtain recognition in a category, an applicant for educational evaluation may undertake further learning and assessment to satisfy the outstanding criteria. Such an applicant must submit a proposal for the form of learning and assessment to be undertaken for approval.


4.9. The following mechanisms may be applied for qualification evaluation as appropriate to individual cases:

4.9.1. An accelerated procedure is available for evaluating a fully documented qualification that is listed for accelerated processing and the quality of which is known to the ECSA. For this procedure, the applicant is required to supply only certified copies of the qualification certificate(s) and academic transcript(s). The evaluation process verifies that the qualification is of the listed type and that the subjects completed are consistent with an engineering qualification. Such qualifications would normally be accredited by a body that is not a signatory to one of the above accords and would normally originate from an education system or institution known to the ECSA as having substantially equivalent standards.

4.9.2. A fully documented qualification that does not conform to a listed known type may also be considered for substantial equivalence according to the criteria listed in the applicable

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tables 1, 2 or 3. In this case, the applicant must provide all the information listed in Appendix1.

4.10. The following mechanisms may be applied for appropriate assessment of individual cases:

4.10.1. Written examination(s) that are prescribed by the ECSA to assess the fundamentals of the discipline relevant to the category with embedded assessment of mathematics and the underpinning natural sciences

4.10.2. A written essay-type examination prescribed by the ECSA on social, environmental, professional and ethical issues together with the integral assessment of written communication ability relevant to the category

4.10.3. Examinations at the exit level of accredited qualifications set by higher education providers or professional examining bodies in engineering specialist areas

4.10.4. Oral examination, providing that this is not the sole mechanism used

4.10.5. Assessment of evidence presented by the applicant of prior learning against the appropriate criteria indicated in tables 1, 2 or 3

4.10.6. Evidence of work experience against the appropriate criteria indicated in tables 1, 2 or 3

4.11. Qualification-evaluation mechanisms indicated in sections 4.9.1 and 4.9.2 are normally applied first before invoking the IA mechanisms mentioned in sections 4.10.1 to 4.10.6.


4.12. Applicants proceeding under methods (iii) or (iv) of clause 3.4 may be interviewed to gain additional information regarding the qualification. This form of interview is not an examination.

4.13. Evaluation of an applicant's qualification and the individual evaluation of an applicant's educational standing by the ECSA is an advisory service.

4.14. Applications must be submitted in English, and all interviews and assessments will be conducted in English.

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4.15. An applicant whose educational achievement is found to be deficient against particular criteria may, within 30 days of notification, submit further evidence for a review of the evaluation.

Table 1: Criteria for substantial equivalence for the Candidate and Professional Engineer

	Qualifications Evaluation Criteria	Individual Assessment Criteria
1.1.	The programme covers the fundamentals of mathematics and the natural sciences appropriate to the discipline. The programme contains the equivalent of at least one semester of mathematical sciences and one semester of natural sciences.	The applicant displays an understanding of and the ability to apply the fundamentals of engineering in a selected discipline together with the underpinning fundamentals of mathematics and the natural sciences.
1.2.	The programme adequately covers the engineering fundamentals appropriate to the discipline.	
1.3.	The programme contains engineering studies related to current practice in the selected field.	The applicant displays proficiency in engineering specialist fields at the exit level.
2.	The level of problem-solving demanded at the exit level corresponds to complex engineering problems defined in ECSA document E-02-PE.	
3.	The programme contains a selection of engineering tools and IT support appropriate to the discipline.	The applicant displays proficiency in the use of engineering tools and IT support appropriate to the discipline.

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	Qualifications Evaluation Criteria	Individual Assessment Criteria
4.	The curriculum has the requirement for a major design exercise. The design problem meets the requirements of a <i>complex engineering problem and the design approach is properly structured.</i>	The applicant demonstrates design proficiency through substantial project work. The design problem meets the requirements of a <i>complex engineering problem and the design approach is properly structured.</i>
5.	The curriculum requires experimental work and research methodology.	The applicant demonstrates proficiency in experimental and research methodology.
6.	The curriculum requires oral and written communication at the level expected of a graduate.	The applicant communicates in writing at the exit level of a BEng programme.
7.	The curriculum contains elements that give an understanding of the impact of engineering activity.	The applicant explains and analyses the impacts of engineering activity.
8.	The curriculum contains elements that give an understanding of ethics and engineering professionalism.	The applicant explains ethical principles and analyses ethical issues.

Table 2: Criteria for substantial equivalence for the Candidate and Professional Engineering Technologist

	Qualifications Evaluation Criteria	Individual Assessment Criteria
1.1.	The programme has a foundation of mathematics and the natural sciences appropriate to an engineering sub discipline with the equivalent of at least three quarters of a semester of mathematical sciences and one half of a semester of natural sciences.	The applicant displays an understanding of and the ability to apply the fundamentals of engineering in a selected sub discipline together with the underpinning fundamentals of mathematics and the natural sciences.
1.2.	The programme adequately covers	

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	Qualifications Evaluation Criteria	Individual Assessment Criteria
	the engineering fundamentals appropriate to the sub discipline.	
1.3.	The programme contains studies of the engineering technologies relevant to the sub discipline.	The applicant displays proficiency in engineering specialist fields of a selected engineering sub discipline at the exit level.
2.	The level of problem-solving demanded at the exit level corresponds to <i>broadly defined engineering problems</i> (defined in ECSA documents E-02-PT, E-O8-PT and E-09-PT).	
3.	The programme contains a selection of engineering tools and IT support appropriate to the sub discipline.	The applicant displays proficiency in the use of engineering tools and IT support appropriate to the sub discipline.
4.	Design proficiency is demonstrated through substantial project work. The design problem meets the requirements of a <i>broadly defined engineering problem and the design approach is properly structured.</i>	The applicant demonstrates design proficiency through substantial project work. The design problem meets the requirements of a <i>broadly defined engineering problem and the design approach is properly structured.</i>
5.	The programme contains experimental or investigative work and information-handling methodology.	The applicant demonstrates proficiency in experimental or investigative and information-handling methodology.
6.	The curriculum requires oral and written communication at the level expected of a technology graduate.	The applicant communicates in writing at the exit level of a BTech / BEng Tech / Adv Dip / B Eng Tech (Hons) programme.
7.	The curriculum contains elements that give an understanding of the impact of the engineering technologies of the	The applicant explains and analyses the impacts of engineering technologies of the sub discipline.

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	Qualifications Evaluation Criteria	Individual Assessment Criteria
	sub discipline.	
8.	The curriculum contains elements that give an understanding of ethics and engineering professionalism.	The applicant explains ethical principles and analyses ethical issues.

Table 3: Criteria for substantial equivalence for the Candidate and Professional Engineering Technician

	Qualifications Evaluation Criteria	Individual Assessment Criteria
1.1.	The programme covers the fundamentals of mathematics and the natural sciences appropriate to a sub discipline with at least the equivalent of one half of a semester of mathematical sciences and one third of a semester of natural sciences.	The applicant displays an understanding of and the ability to apply a coherent range of discipline-specific fundamental principles in engineering science and technology supported by established mathematical formulas to solve <i>well-defined engineering problems</i> .
1.2.	The programme adequately covers the engineering fundamentals appropriate to the sub discipline.	
1.3	The programme contains studies of the engineering technologies relevant to the sub discipline.	The applicant displays proficiency in discipline-specific engineering techniques at exit level.
2.	The level of problem-solving demand at the exit level corresponds to <i>well-defined engineering problems</i> (defined in ECSA documents E-02-PN, E-08--PN, E-06-PN and E-21-PN).	
3.	The programme contains a selection of engineering tools and IT support	The applicant displays proficiency in the use of engineering tools and IT support

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	Qualifications Evaluation Criteria	Individual Assessment Criteria
	appropriate to the sub discipline.	appropriate to the discipline for the solution of <i>well-defined engineering problems</i> .
4.	Design proficiency is demonstrated through project work. The design problem meets the requirements of a <i>well-defined engineering problem</i> and the design approach is properly structured.	The applicant demonstrates procedural design proficiency through project work. The design problem meets the requirements of a <i>well-defined engineering problem and the design approach is properly structured</i> .
5.	Proficiency in experimental procedures and data-handling methodology is demonstrated.	The applicant demonstrates proficiency in standardised experimental and research methodology.
6.	The curriculum requires oral and written communication using prescribed formats.	The applicant communicates in writing at the exit level of an NDip, a Diploma in Engineering, a Diploma in Engineering Technology or an Advanced Certificate in an Engineering programme.
7.	The curriculum contains elements that give an understanding of the impact of the engineering procedures of the sub discipline.	The applicant explains and analyses the impacts of engineering activity and addresses issues by defined procedures.
8.	The curriculum contains elements that give an understanding of ethics and engineering professionalism.	The applicant understands and commits to professional ethical principles in engineering.

5. APPLICANTS WHO DO NOT MEET REQUIREMENTS

5.1. In the case of an applicant who does not meet the requirements, the general practice is to inform the applicant that he/she has not met the educational requirements and list the criteria that were not satisfied. The applicant may subsequently take remedial action and return for evaluation. In general, applications will not be refused outright; only in rare cases

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will a decision of no recognition possible be returned. Refusals, therefore, need not be referred to the Central Registration Committee for a final decision.

6. COMPOSITION OF INTERVIEW AND ORAL EXAMINATION PANEL

6.1. An interview in terms of Section 4.12 or an oral examination in terms of Section 4.10.4 must be conducted by at least two academics who are currently active in conducting accredited programmes that are in or related to the discipline of the applicant and one practitioner who is registered in a relevant category.

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REVISION HISTORY

Revision Number	Revision Date	Revision Details	Approved By
Rev. 1.0	25 Nov 2010	Implementation Plan to follow	Approved by Council
Rev. 1.1	17 Mar 2011	Minor editorial changes	Approved by Council
Rev. 1.2	28 Jan 2015	Addition(s) to report Addition of Design Reports in Appendix 1	Approved by EPQEC
Rev. 1.3	8 Aug 2018	Additions of new Technology Qualifications	By RAH
Rev. 1.4	15 Sep 2018	Correcting errors	RAH
Rev. 1.5	18 Sep 2018	Corrected version	RAH/TS
Rev. 2	23 Oct 2018	Approval	PDSGC

The Criteria and Processes for:

Recognition of Educational Qualifications for Professional Categories

Revision 2 dated 23 October 2018 and consisting of 20 pages has been reviewed for adequacy by the Business Unit Manager and is approved by the Executive: Research Policy and Standards (RPS).


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Business Unit Manager


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Executive: RPS

13/02/2019
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Date


14/02/2019
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Date

The definitive version of this policy is available on our website.

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Document No.: E-17-PRO	Revision No.: 2	Effective Date: 23/10/2018	
Subject: Criteria and Processes for Recognition of Educational Qualifications for Professional Categories			
Compiler: M Mtshali	Approving Officer: E Nxumalo	Next Review Date: 23/10/2022	Page 20 of 21

APPENDIX

Information for applicants regarding evaluation of qualifications, individual evaluation and proceeding by methods (iii) or (iv)

A person proceeding by the qualification-evaluation route using methods (iii) or (iv) must provide, at minimum, the following evidence of educational achievement:

- Certified copies of all qualifications
- Full academic transcripts of all qualifications
- If the type of programme does not appear on the list of programmes for which graduates are eligible for consideration under case (iii), the following material must be supplied:
 - A curriculum analysis using the worksheet provided with as much detail as possible for each qualification
 - Details as to how the credits are calculated/allocated
 - Syllabi of the subjects studied
 - All Project Reports
 - Design Reports
 - Final Year / Capstone Project and dissertations for postgraduate qualifications

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