

# POLICY STATEMENT R2/1C

## Acceptable Engineering Work for Registration of Professional Engineering Technicians

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### ENGINEERING COUNCIL OF SOUTH AFRICA

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## Purpose of the Policy Statement R2/1C

This policy statement describes the education, training and professional development required by the Council for registration as a Professional Engineering Technician.

### 1. Introduction

#### 1.1 Categories - Professional Engineering Technician and Candidate Engineering Technician

- (a) Professional Engineering Technicians are people who recommend, control, administer and implement known or novel technology in an innovative manner in a discipline, sub-discipline or specialisation of engineering. They are registered in terms of Section 18(1)(a)(iv) of the Engineering Profession Act, 2000 (Act No 46 of 2000). – (the Act)
- (b) Candidate Engineering Technicians are people who have an educational qualification recognised by Council for the purpose of registration as a Candidate Engineering Technician. They are registered in terms of Section 18(1)(b)(iv) of the Act.

#### 1.2 The significance of registration as a Professional Engineering Technician

The significance of registration as a Professional Engineering Technician is that:

- (a) It is a commitment to subscribe to the standards set by ECSA and to work within the ECSA Code of Conduct.
- (b) It is proof of competency in terms of the standards of a Professional Engineering Technician, measured by peers.

These features contribute to the protection of the public with respect to the work of a Professional Engineering Technician and lend confidence in appointing such a person to carry out engineering work.

### 2. Criteria for Registration

(For purposes of this document “Council,” means the Engineering Council of South Africa established in terms of the Act, or any committee duly authorised by the Council to fulfill certain functions on behalf of the Council.)

Section 19(2)(a) and (b) of the Act reads as follows:

“19(2) *The council must register the applicant in the relevant category and issue a registration certificate to the successful applicant in the prescribed form if, after consideration of an application, the council is satisfied that the applicant –*

- (a) *in the case of a person applying for registration as a **professional [engineering technician]** – (own parenthesis)*
  - (i) *has demonstrated his or her competence as measured against standards determined by the council for the relevant category of registration; and*
  - (ii) *has passed any additional examinations that may be determined by the council;*
- (b) *in the case of a person applying for registration as a **candidate [engineering technician]** ..., has satisfied the relevant educational outcomes determined by the council for this purpose, by – (own parenthesis)*
  - (i) *having passed accredited or recognised examinations at any educational institution offering educational programmes in engineering; and*
  - (ii) *having passed any other examination that may be determined by the council; or*
  - (iii) *presenting evidence of prior learning in engineering.”*

### **3. Engineering Work for Candidate Engineering Technicians**

#### **3.1 Practical Training**

Practical training should result in the Candidate Engineering Technician developing the competence required for registration as a Professional Engineering Technician. It includes but is not limited to an appropriate combination of:

- (a) Engineering work
- (b) Practical training courses or exercises
- (c) Theoretical courses and advanced studies

The training of Candidate Engineering Technicians enables them to implement known and novel technology in an innovative manner to complete engineering work. Practical Training leads to autonomy and competence regarding evaluation, consultation and implementation of work. This enables individuals to take professional responsibility for work.

Practical Training should preferably be structured and undertaken with a Commitment and Undertaking in place (See Section 4).

A Candidate Engineering Technician would normally complete the Practical Training phase upon registration as a Professional Engineering Technician.

#### **3.2 Duration of Practical Training**

The minimum duration of practical training is three years.

Council will consider experience and training prior to obtaining an educational qualification on merit when assessing competence.

#### **3.3 Scope of Practical Training**

In this document the scope of training is described in generic terms. Additional information relating to specific disciplines or specialisations of engineering will be published in separate discipline-specific guidelines.

Practical training must include, but is not limited to, the following:

- (a) Application of known and novel technology. A variety of activities or functions to carry out engineering work within a specific discipline (e. g. civil), sub-discipline (e.g. electrical light current - process control) or combination of disciplines of engineering (e.g. mechanical, electrical, process, chemical) and may include a specialisation.
- (b) There are a variety of activities or functions, which candidate engineering technicians may carry out in the execution of engineering work. These include:
  - (i) Design & draughting, specifying, planning
  - (ii) Manufacturing, construction, installation, calibration, commissioning, operating, monitoring
  - (iii) Maintenance, modification, development
  - (iv) Operational management, economics and resources management

The number and ratio of activities carried out is determined by the discipline and the working environment.

- (c) Social, economic, safety, health and environmental issues within engineering practice.
- (d) Candidate engineering technicians need to develop their skills to communicate effectively, covering oral, written, drawn & electronic communication.
- (e) Independent work, teamwork, supervision and management.
- (f) Increasing responsibility and accountability for work.

Training must be developmental, building upon the knowledge and skill gained through the educational qualification. This is indicated through innovation in the application of technology, acquisition of knowledge through research, additional studies and continuing professional development, and increasing scope of work.

Candidate engineering technicians should also assist in facilitating of the education, training and development of others through mentoring and coaching of subordinates.

### 3.4 Level/Range of Training

In the setting up of a training program the following are considered appropriate:

- (a) Generally defined work packages (problems, projects, etc).
- (b) Work normally conducted in accordance with standards, codes and procedures. Work beyond these may be required and may be acceptable given that the candidate demonstrates sound judgement in this regard.
- (c) Problem solving requiring the use of fundamental principles, underlying techniques and calculations based on formulas.
- (d) Increasing responsibility and accountability for work and accepted by the Candidate Engineering Technician.
- (e) Consultation with relevant people when appropriate.
- (f) Tasks/project/activities undertaken become larger and more complex.
- (g) Compliance with legislation.
- (h) Compliance with the Code of Conduct.
- (i) Evaluation of work by the candidate, supervisor and or client.

## 4. Training under a Commitment and Undertaking

Training under a Commitment & Undertaking requires that the Candidate Engineering Technician and the employer work together to use the opportunities available to achieve the scope of training described in Section 3.

The benefit of training under a Commitment and Undertaking is the achievement and recognition of the standard of competence that is accepted for Professional Engineering Technicians in an efficient manner.

### 4.1 Objective of a Commitment & Undertaking

The objective of a Commitment & Undertaking Agreement (C&U) is to ensure that the post-educational qualification training and development of Candidate Engineering Technicians is carried out to the level required for registration as a Professional Engineering Technician, and in a manner that is to the mutual benefit of the Candidate Engineering Technician, the employer, and the public at large.

#### Definitions

In this context the word –

**“commitment”** refers to the expressed resolve on the part of employers as an indication of their alignment with, and substantive support for, one of the ideals of the profession, namely that every opportunity, support and guidance should be afforded to candidates during their period of training and professional development:

and

**“undertaking”** refers to employers’ express resolve to give effect to their commitment to the best of their ability.

In short, the implications of these “expressions of intent” will be that employers will be required to–

- (a) Structure the training of, and actually train, their candidates, in accordance with the requirements of this Policy Statement and any discipline guideline issued by ECSA for the purpose of training candidates.
- (b) Provide regular guidance to their candidates through competent supervisors, mentors and referees as set out in the guideline.

## 4.2 Features & Requirements for training under a Commitment and Undertaking Agreement

- (a) Upon registering a CU, employers will be expected to ensure that all the essential elements referred to below are addressed during practical training.
- (b) It should be noted that by registering a CU, employers are encouraged to draw up more detailed programmes appropriate to their own circumstances.
- (c) Each CU will have a permanent registration number allocated. All persons when applying for registration as Professional Engineering Technicians should quote this number.
- (d) ECSA views these “expressions of intent” in a very serious light. It must be satisfied that they not only represent corporate policy, but also that top management assumes ultimate responsibility for implementation of this policy. It will accordingly be expected that Chief Executive Officers issue the necessary directives to those charged with this responsibility.
- (e) Credibility of employers’ CUs will be measured through an ongoing verification process where the quality of applicants’ training and the level of their professionalism will be assessed.
- (f) In the case of an employer’s constant failure or inability to honour its CU, the situation can arise where ECSA may have no alternative but to deregister such employer’s CU.
- (g) The key to operating successfully under a CU is mentorship. Therefore, employers must when registering a CU, confirm the availability of a mentor within the organisation, or expressly undertake to arrange an external mentor to guide their candidates through the process of training.
- (h) A CU will not be registered by ECSA unless at least one mentor (internal or external) is listed against that CU. It is a responsibility of the listed mentors to advise Council of their movements should their association with an employer and a particular CU in respect of which they have been registered be terminated.
- (i) For the purpose of listing, mentors are required to be registered persons who demonstrate the necessary commitment and accept the professional responsibility to fulfil this function.
- (j) In addition to mentoring, the employer must ensure the availability of supervisors and referees for effective training.

*A pro forma of the Commitment and Undertaking is provided at the end of this Policy Statement.*

## 4.3 Role of Mentor

The mentor is required to oversee the training of the individual Candidate Engineering Technician on a regular basis. This includes:

- (a) Assuring that the Candidate Engineering Technician has a training plan that addresses the issues described in 3 above.
- (b) Assuring that the training is managed against the training plan. Management of deviations from the plan that are encountered in the working environment is considered an important component of the development of a Candidate Engineering Technician.
- (c) Assuring that the day-to-day supervision and training is carried out by competent persons, who ECSA recommends should be registered preferably in the category of Professional Engineering Technician. This competency includes:
  - (i) Technical expertise regarding the work being done.
  - (ii) Expertise in supervision and training of Candidate Engineering Technicians.
  - (iii) Commitment to supervision and training of Candidate Engineering Technicians.
- (d) Providing guidance and encouragement other than ‘day-to-day’ supervision and training. This is often of an informal/personal nature.
- (e) Ensuring that the Candidate Engineering Technician receives fair opportunity to develop and fair assessment.
- (f) Acting as a role model.

*A mentor may act as a trainer, supervisor or referee. However, it is advisable to make use of other referees when this is possible.*

## 4.4 Attributes of Mentors

The following attributes are considered essential for a mentor to ensure successful professional mentorship:

- (a) Technical competency at the level of a Professional Engineering Technician.
- (b) Ability and position/relationship with the employer/sponsoring organisation to execute the duties listed in 4.3 above.
- (c) Experience of learning through a Commitment & Undertaking agreement or similar process.
- (d) Commitment to carry out the duties of a mentor.

## 5. Documentation for the Recording of Training

Documentation is part of the practical training process. As such it is understood that the Candidate Engineering Technician is responsible for preparing and keeping documentation that is necessary to manage the training process.

### Portfolio of Learning

- (a) A portfolio of learning is an individual's record of knowledge and skills acquired during his or her career.
- (b) Council does not prescribe documentation for a training programme or that a portfolio is a compulsory part of practical training.
- (c) It is recommended that Candidate Engineering Technicians keep records of their training. An adequately compiled portfolio of learning, kept up to date with ones learning, contains the evidence necessary to submit an application for registration when the required standard is reached.

*This makes the preparation of an application for registration far easier than it would be if evidence must be collected some years after the learning took place.*

- (d) It is strongly recommended that Candidate Engineering Technicians include the following in their portfolios:
  - (i) Copies of training programmes and records of compliance with programmes
  - (ii) Records of achievements
  - (iii) Assessment results
  - (iv) Documentation from supervisors, coaches, assessors and mentors
  - (v) Examples or evidence of work done

In addition it is recommended that training and experience reports (*as found in the application form for registration, available from ECSA – at [www.ecsa.co.za](http://www.ecsa.co.za)*) are completed and signed by supervisors when relevant sections of work (*such as projects*) are completed. *This will save having to recreate reports and find individuals who can vouch for authenticity some time after the work has been completed.*

## 6. Continuing Professional Development (CPD)

CPD can be defined as the systematic maintenance, improvement and broadening of knowledge and skills, and the development of personal qualities necessary for the execution of professional and technical duties throughout an engineering practitioner's career.

The principle to undertake CPD is included in the Engineering Profession Act, 2000 (Act 46 of 2000). At the time of registration, candidates will be assessed as having the professional competence to enable them to practice safely and effectively in their discipline of engineering. Professional Engineering Technicians are obliged by the Code of Conduct to undertake CPD, the nature, range and extent of what is required varies with the work to be undertaken. Professional Engineering Technicians are required, at all times, to take all reasonable steps to maintain and develop their competence and knowledge in their field of professional activity.

Any combination of activities listed below will constitute CPD:

- Attending courses, seminars, congresses and technical meetings organized by engineering institutes, universities, other professional bodies and course providers.
- Actively participating in conferences, serving on technical or professional committees, and activities of professional engineering institutes.
- Undertaking structured self-study (i.e. using textbooks with examples).

- Studying technical literature (e.g., journals, and magazines).
- Taking correspondence courses and studying other supervised study packages.
- Taking in house courses provided by employers.
- Enrolling for formal post diploma studies.
- Writing technical papers or presenting lectures at an organized event.

## 7. Application Documentation

Applications for registration must be made using the application form as prescribed by Council.

Application forms must be completed and supporting evidence submitted in accordance with the instructions provided in the forms. Failure to comply with the instructions is likely to result in a deficient application and may prejudice the success of the application. It may also result in a delay in processing the application because an application will not be considered unless complete.

## 8. Registration Process

### 8.1 Process Followed

The process followed is specified in the Rules for the Registration Committee for Professional Engineering Technicians that are prescribed by the Council. This includes:

- Administration regarding the application – recording receipt of the application, checking for completeness, submission to the Registration Committee for Professional Engineering Technicians (Committee)
- Review by a sub-committee
- Review of recommendation by the Committee or referral to a second sub-committee (in the case of doubt regarding competency)
- Examination as prescribed by Council – *this is currently an interview of the candidate by an interviewing committee comprising peers nominated by the Committee.*
- Decision by the Committee based on the recommendations of the sub-committee(s) and the outcome of the examination.
- Registration and written confirmation to the applicant when successful.
- Referral to the Central Registration Committee and Council in the case of a refusal to register.
- Communication of the decision regarding registration.

### 8.2 Possible Reduction of the Process

- When the written application contains evidence that satisfies the Committee of an applicant's competence, the Committee may in its discretion exempt an applicant from the examination.
- Completing good training under a Commitment & Undertaking should normally result in adequate training and a successful application. This means that a Candidate Engineering Technician who successfully completes practical training under a Commitment & Undertaking could expect to be exempted from the examination.

## 9. Alternative Route

Council considers all evidence submitted by an applicant for registration as a Professional Engineering Technician. This includes qualifications that are not recognised by ECSA for the purposes of registration and experience that was not obtained through structured practical training, as described in 3.1 above. The credit value of such evidence towards registration is determined by Council.

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## Proforma of a Commitment & Undertaking

### COMMITMENT AND UNDERTAKING (CU)

I the undersigned, \_\_\_\_\_ in my capacity as

\_\_\_\_\_ of \_\_\_\_\_

hereby wish to register our commitment and undertaking (CU) to structure the training of, and actually train, our candidate engineering technicians in accordance with the requirements of Policy Statement R2/1C "Acceptable Engineering Work for the Registration of Professional Engineering Technicians."

I hereby confirm that it is our express intention, in so far as we are able to do so, to encourage our engineering diplomats to register as Candidate Engineering Technicians and to provide them with every opportunity to achieve the standard of professionalism required by ECSA.

- ❖ The Professional (or Registered) Engineering Technicians and or Professional Engineering Technologists or Professional Engineers referred to in the attached Annexure have been identified from within the organisation to act as internal mentors in accordance with Policy Statement R2/1C.
- ❖ Since we do not have a person on our staff who qualifies as an internal mentor the following person(s) has/have been appointed as external mentor(s) for our candidate engineering technicians and we undertake that we will create an environment which is conducive to effective liaison between our candidate engineering technicians and the external mentors.

We hereby undertake that in the event that any one or more or all of the mentors referred to in this application should leave our employ, or be unable to fulfill their functions as mentors, we will immediately advise the Council of such change and provide the name(s) of any replacement(s).

We understand and accept that ECSA has the discretion to deregister this CU should the training provided by this organisation not satisfy ECSA's requirements, provided that ECSA shall have given reasonable notice of its intention to do so and have given reasonable time in which any deficiencies should be rectified.

- (Delete whichever is not applicable)
-