



ENGINEERING COUNCIL  
OF  
SOUTH AFRICA

POLICY

FOR THE ACCREDITATION OF  
TECHNOLOGY PROGRAMMES IN ENGINEERING  
NATIONAL DIPLOMA: ENGINEERING AND B TECH ENGINEERING DEGREES

FOR THE  
PURPOSES OF REGISTRATION

**Approved by the Technikon Accreditation Committee (TAC) on 17 May 2002**

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Revision 2

# POLICY

## FOR THE ACCREDITATION OF TECHNOLOGY PROGRAMMES IN ENGINEERING

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### POLICY- (BASIS FOR ACCREDITATION)

## Section 1

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# Policy

## Introduction

In terms of Section 13 of the Engineering Profession of South Africa Act (No. 46 of 2000) the Engineering Council of South Africa (ECSA) must conduct accreditation visits to any education institution at least once during its term of Council (four years). ECSA must either conditionally or unconditionally grant, refuse or withdraw accreditation with regard to all educational institutions and their educational programmes with regard to engineering. This duty is done in consultation with the Council on Higher Education (CHE).

The word 'programme' as used in this document means the educational activities that lead to the award of a qualification that is recognised as part of the requirements for registration. In assessing a programme ECSA considers all the factors that influence the standard of the outcomes achieved. The criteria used during 2000 visit's as amended, will be used for visits to any education institution offering high education engineering programmes. Universities of Technology, Comprehensive Universities and Private Providers offering Technology Programmes here after, for this Policy Document be referred to as Universities of Technology. This is in accordance with the an agreement reached after the regular visits in 2000, at the meeting held at ECSA on 27 September 2000, that the accreditation process and criteria would only be changed when significant change to the specification of the programmes or the assessment process is in place.

(The changes made in this revision of the Technology Accreditation Policy address the requirements of the Act no 46 of 2000 as referred to above.)

ECSA carries out accreditation of programmes offered by Universities of Technology to establish:

Whether the qualifications awarded from the programmes meet the educational requirements leading towards registration as Professional Engineering Technologists, Professional Certificated Engineers or Professional Engineering Technicians.

Whether the graduates from the respective programmes are ready for employment and are equipped to continue learning throughout their careers.

To establish the international comparability of the programmes.

To assure the public of the quality of the programmes.

To encourage improvement and innovation in engineering education in response to national and global needs.

Currently ECSA accredits only the National Diploma: (ND) Engineering and Baccalareus Technologiae (B Tech) Degree engineering qualifications that are offered by Universities of Technology.

The purpose of this document is to record Council's policy and procedures concerning the evaluation and accreditation of National Diplomas and B. Tech. Degrees in Engineering as offered by Universities of Technology. These qualifications are selected, as they are the benchmark qualifications for the educational component of the requirements for registration as Professional Engineering Technologists, Professional Certificated Engineers and Professional Engineering Technicians.

It must be noted that major developments are taking place in education and training as is being facilitated by the South African Qualification Authority (SAQA) and the National Skills Act 97 of 1998. These developments will affect the work of engineering practitioners and the related education and training in the future. This means that this policy must be reviewed and revised to ensure relevance on a regular basis during the next few years.

ECSA is in consultation with the Council for Higher Education (CHE) regarding accreditation of engineering programmes. In addition ECSA has invited the CHE to observe the visits, in terms of the Memorandum of Understanding between ECSA and the CHE.

**This guideline is based on the following official documents:**

**1 ECSA Policy Documents relevant to Acceptable Engineering work for Candidate Registration as Professional in the following categories:**

<b>R2/1B</b>	<b>Technologist</b>
<b>R2/1D</b>	<b>Certificated Engineer</b>
<b>R2/1C</b>	<b>Technicians</b>

**2 Rules of Conduct for Registered Persons**

**3 International Accords**

<b>Sydney Accord</b>	<b>(B Tech)</b>
<b>Dublin Accord</b>	<b>(ND)</b>

**1.1 BENEFIT OF ACCREDITATION**

Accreditation of any University of Technology programme means that it is recognized as satisfying the criteria prescribed for the relevant cadre of engineering practitioner as defined by ECSA. In addition it is judged that the programme is expected to continue to meet these criteria for a period of up to four years.

For accreditation the qualification as presented must comply with ECSA's requirements.

The benefit of accreditation of a National Diploma Engineering programme is that graduates of the programme are recognised as meeting the educational requirements toward registration as a Professional Engineering Technician.

The benefit of accreditation of a Bachelor of Technology Engineering programme is that graduates of the programme are recognised as meeting the educational requirements toward registration as a Professional Engineering Technologist. Some of the engineering programmes address the educational requirements leading to the award of the Government Certificates of Competency as Engineers or Mine Managers.

In addition accreditation will:

1. Confirm that the graduates from the respective programmes are ready for employment and are equipped to continue learning throughout their careers.
2. Confirm that the qualification has a benchmark that can be used to establish its comparability with international qualifications.
3. Assure the public of the quality of the programme.
4. Encourage improvement and innovation in engineering education in response to national and global needs.

## 1.2 RECOGNITION OF THE AUTONOMY OF UNIVERSITIES OF TECHNOLOGY

ECOSA is required to accredit Universities of Technology in terms of Section 13 of the Engineering Profession Act in liaison with these educational institutions. Between accreditations, the University of Technology is expected to inform ECOSA of significant changes which may affect the accreditation status of a programme and if necessary, to initiate a re-evaluation of the programme.

ECOSA will endeavour to conduct accreditations with other quality assurance bodies including ETQA's. In entering such arrangements, the Technology Programme Accreditation Committee (TPAC) shall be satisfied that ECOSA's documentation, on-site visit and evaluation requirements are complied with. The mutual arrangements shall be confirmed in writing before commencement of Education Training and Quality Assurers, accreditation arrangements.

ECOSA sets minimum standards for registration requirements. Universities of Technology have the flexibility to construct programmes (currently these lead to the award of National Diploma and B. Tech. Engineering Degree qualifications) to suite specific requirements and conditions.

## 1.3 UNIVERSITY OF TECHNOLOGY PROGRAMMES CONSIDERED FOR ACCREDITATION

ECOSA will consider accrediting programmes in engineering at South African Universities of Technology, which have the following contents:

### 1.3.1 National Diploma: Engineering

- Mathematical and engineering science foundation
- Laboratory work integrated with theoretical lectures
- Experiential training component

- Formative elements indicated in the SAQA critical cross-field outcomes as required for middle and higher level occupations (see item 2.4)
- Foundation for applying the following in the work situation – professional & entrepreneurial practice, management, social and environmental sensitivity

### 1.3.2 B Tech Degree Programmes in Engineering

- The application of an advanced level (higher than the National Diploma: Engineering) of mathematical, science and technological knowledge.
- An emphasis on design and problem solving methodology leading to the innovative application of engineering technology at least one justifiable industrial project must be undertaken.
- Formative elements indicated in the SAQA critical cross-field outcomes as required for middle and higher level occupations (see item 2.4)
- Foundation for applying the following in the work situation – professional and entrepreneurial practice, management, social and environmental sensitivity.

Each programme leading to the National Diploma: Engineering or B Tech degree as identified individually by the University of Technology is accredited separately.

## 1.4 ACCREDITATION

### 1.4.1 Motivation/justification for accreditation activities/visits

Accreditation visits are conducted by ECSA.

#### 1.4.1.1 For New Programmes

At the planning stage, documentation describing the qualification must be submitted to ECSA for preliminary evaluation. The recommended guide for this documentation is described in Section 3.1.1.1 – submission prior to an accreditation visit. TPAC or a committee appointed by the TPAC will examine the documentation and advice on the possible compliance of the programme with the requirements of ECSA. The TPAC will provide the University of Technology with comment on the proposed programme.

When the specification of the qualification is supported by ECSA a date for the initial accreditation visit will be agreed to. This will usually take place when University of Technology is ready to commence offering the programme. This requires that the infrastructure is in place (development plans and documentation of the qualification is complete, staff are appointed and other resources such as laboratories are ready for use) or that acceptable and reliable plans are in place for ensuring that the specifications will be complied with.

### Provisional Accreditation

If the infrastructure in place is found to be acceptable, ECSA will usually grant provisional accreditation to a new programme until an adequate number of students have received the qualification. At this stage a follow-up accreditation visit is required to review the standards achieved/results of qualification. ECSA may decline to accredit a National Diploma: Engineering and/or B. Tech. Engineering Degree programme until sufficient graduates have been produced to allow a full and valid judgement to be made of the qualities of graduates.

#### 1.4.1.2 For Regular Evaluation of Fully Accredited Qualifications

Accreditations are carried out in a four-year cycle in terms of the Engineering Profession Act and the Universities of Technology will be advised of the cycle of visits timeously.

#### 1.4.1.3 For Re-evaluation of Programmes

ECSA may require a re-visit to review the status of non-conformities as stated in documentation forwarded to the University of Technology after the relevant TPAC meeting.

#### 1.4.1.4 For a Qualification that has been Revised

When material change to an accredited qualification as described in 1.4.4 occurs or is desirable/necessary, ECSA may judge that additional investigation is required. ECSA will indicate this requirement to the University of Technology and may require a visit within a short period of time (typically within one month.)

### 1.4.2 Accreditation Decisions

Decisions of the TPAC on each programme are based on the accreditation team's findings. Non-conformance of a qualification to the requirements/criteria/elements as identified by the accreditation team is classified as follows:

- (a) **Deficiencies:** Matters that prevent full-term accreditation being granted. In this situation one or more deficiencies precludes accreditation until the next regular visit. These must be addressed in a manner acceptable to ECSA if accreditation is to remain current.
- (b) **Concerns:** Matters that the accreditation team believes adversely affect the quality of the programme but which do not preclude granting of accreditation. Concerns must be resolved by the next regular or interim visit in accordance with the recommendations of ECSA.

- (c) **Comments:** Communicated impressions of the team to the Universities of Technology on matters that are not classified as deficiencies or concerns.

The decisions that the TPAC will make resulting from an accreditation process fall into the following classes:

- i. Accreditation is granted to a programme that has no identified deficiencies for a period extending to the next regular visit.
- ii. Accreditation is granted to a programme with identified deficiencies for a specified time. An interim visit is required before the specified time expires, during which the deficiencies will be re-evaluated. The duration of the time granted would be set according to the impact of the deficiencies on the competency of the individuals completing the qualification and the reasonable time required to remedy the deficiencies. The criteria will be determined independently for each qualification.
- iii. Accreditation is granted to a programme with identified deficiencies for a time specified by ECSA with the requirement that an interim report describing the change of status of the deficiency is submitted by the University of Technology for review by ECSA. The University of Technology undertakes to submit this report before the date specified. This option will be used when it is expected that a report will provide adequate proof that the deficiency is remedied. If the report is not adequate ECSA will take appropriate action.
- iv. Provisional accreditation is granted to a new programme until an adequate number of students have received the qualification.
- v. Accreditation is granted to a programme for one year with notice to terminate accreditation when persistent deficiencies are identified and remedial activity does not meet the criteria required.
- vi. Accreditation is summarily withdrawn from a programme in the case of a qualification that was previously accredited but has serious deficiencies and there is no reasonable likelihood of these deficiencies being rectified in a reasonable time.
- vii. Accreditation is withheld from a programme that was not previously accredited and has serious deficiencies and there is no reasonable likelihood of these deficiencies being rectified in a reasonable time.

#### 1.4.3 Compatibility of decisions within previous accreditations

The relationship between types of decisions defined previously is as follows:

- i. Full accreditation is replaced by accreditation until the next regular visit
- ii. Programmes not granted full term accreditation due to one or more deficiencies requires an interim visit. This accreditation is granted until the findings of the interim visit have been tabled at the TPAC meeting. The first period is deemed to have accreditation granted with the requirement of an interim visit.
- iii. Programmes not receiving full accreditation for a second consecutive period are deemed to be on notice to terminate accreditation.

#### 1.4.4 Development and Material change during a period of accreditation

Engineering and education are dynamic activities. Therefore it is expected that changes to qualifications will take place. Accreditation will be reviewed if material changes are made to the programme during the period of accreditation. The University of Technology is expected to notify ECSA of such changes. Material change as considered by ECSA includes but is not limited to the following that will affect the outcomes achieved:

- i. Changes of key staff including but not limited to the person responsible for the qualification and individuals responsible for components of learning
- ii. Changes of purpose of the programme
- iii. Changes of the criteria of the programme
- iv. Changes of the learning strategy
- v. Changes of the assessment method
- vi. Changes of the resources
- vii. Changes in the programme content including the acceptance of alternative subjects.

#### 1.5 WITHDRAWAL OR WITHHOLDING OF ACCREDITATION

1.5.1 Accreditation of an existing accredited programme may be withdrawn after a final visit when the programme considered is judged to have deficiencies.

1.5.2 ECSA reserves the right to withdraw accreditation at any time if the programme has become so deficient that the University of Technology cannot reasonably be expected to remedy the deficiencies within a reasonable time or is unwilling or unable to do so.

1.5.3 When an existing non-accredited programme is judged to be so deficient that accreditation is withheld, ECSA may set a minimum time appropriate to the circumstances before a reapplication for evaluation may be made.

#### 1.6 TERMINATION/EXPIRY OF ACCREDITATION

Accreditation shall terminate at the end of the set period unless extended or converted to allow the evaluation process to be completed before the termination date.

The TPAC shall satisfy itself that ECSA has taken all reasonable measures to initiate the evaluation and that failure to arrange a visit is as a consequence of the University of Technology's wishes, refusal or default. Expiry of accreditation without an evaluation visit shall be reported to ECSA Council, who will determine any course of further action.

#### 1.7 CONDITIONS, CRITICISM AND COMMENTS

In making its report to the TPAC, an accreditation team shall identify factors or circumstances that, in its opinion, adversely affect the standard of the programme. The team shall advise whether these factors or circumstances indicate withdrawal of accreditation or granting of accreditation for a

limited period, subject to the specified issues in the academic and/or practical component being addressed within the period.

Where the advised factors or circumstances have to be met before accreditation is granted, the University of Technology must be given the freedom to determine the way it will bring about improvements.

In addition, the team is encouraged to make constructive comment and offer constructive criticism, which will benefit the programme.

Deficiencies, constructive comments and constructive criticism must be raised with the head of department and relevant staff members at interviews during the visit. These will be confirmed in the report.

## 1.8 ACCREDITATION TEAM

### 1.8.1 Appointment of the Engineering Accreditation Team

An accreditation team is appointed to evaluate both the National Diploma: Engineering and B Tech Engineering Degree programmes. The TPAC appoints a team in consultation with relevant bodies such as professional institutions, Universities of Technology and industry.

A visit leader/chairperson will be appointed for the accreditation visit. Programme teams are established for the accreditation of each programme.

**Names of the proposed team members shall be submitted to the dean for confirmation.**

### 1.8.2 Composition of the Accreditation Teams for all Visits

#### 1.8.2.1 The minimum team per programme of Engineering

The minimum team comprises of a core of three.

If the course is relevant for registration of Professional Certificated Engineers, at least one Professional Certificated Engineer must be included in the team.

#### 1.8.2.2 The preferred team composition of the programme/branch team

The preferred composition of the team will include representation from the following:

- Two or more members who are in the industry served by the qualification being evaluated
- One or two members who are active in the profession
- One or two members who are academics or who have had significant recent academic experience in the discipline of the National Diploma: Engineering and/or B Tech Degree programme being evaluated

- Representation of the teaching profession who have recent experience in presenting this or a similar programme
- A team leader is appointed from within the team and may in turn; appoint a rapporteur for each programme/branch to be evaluated. The leader retains full responsibility for the ECSA report.

The typical maximum size of an ECSA accreditation team will consist of four or five. However additional members may be appointed for programmes in which a number of alternative subjects require investigation. Assessors must be registered with ECSA. The team leaders may draw on specialist expertise.

Where two or more programmes are simultaneously being evaluated and have significant overlap in engineering content, the teams may have common membership. The leaders shall ensure that the reduced number of members are registered, experienced accreditors, able to address all the functions.

The member's individual specialities should be spread as far as numbers permit across the sub-disciplines of the qualifications.

One of the team should, if possible, be a member of an ECSA committee. Two or more members of the team should have had previous experience of accreditation visits and must be registered and be well-experienced members of the profession.

### 1.8.2.3 Visit Leader's Responsibilities

A visit leader appointed by the TPAC, who shall be a registered person with accredited experience, will accompany the delegation. The visit leader's responsibilities include:

- i. Assist in selection of the Deputy Visit Leader
- ii. Finalisation of the team membership;
- iii. Finalisation of the visit timetable;
- iv. General co-ordination and problem solving during the visit, liaison between teams on matters of mutual interests;
- v. Courtesy visits to executive officers of the Universities of Technology;
- vi. Meeting with student leadership
- vii. Assisting team leaders to produce consistent recommendations across teams and across visits;
- viii. Endorsing the teams' recommendations
- ix. Ensure that the Visit Leader's Report and Team Leaders report are sent to the Dean for factual correctness
- x. Presentation of reports at the TAC meeting;
- xi. Post visit evaluation of process and team performance; and
- xii. Identification of potential team and visit leaders for training for future visits.
- xiii. Where the Visit leader deems it necessary a meeting may be convened to identify and consolidate systemic and other relevant issues.

#### 1.8.2.4 Team Leader's Responsibilities

The team leader is expected to perform the following functions:

- i. Assist with selection of remaining teams members;
- ii. Before the visit, read the documentation fully in order to identify issues that require investigation and instances where additional information is required;
- iii. During the visit, ensure that all necessary information to support the team's findings and recommendation is collected and verified;
- iv. Allocate duties to team members;
- v. Ensure that all deficiencies, concerns and comments are identified to the Head of Department during the visit;
- vi. Ensure that the draft report is written by the end of the visit;
- vii. Ensure that the final report is produced, approved by the team and submitted to the ECSA Secretariat.

#### 1.8.3 Training of Team

ECSA will provide training of the core team by providing compulsory training for the accreditation team.

#### 1.8.4 Observers

The policy on observers is contained in Council's Document G10.

### 1.9 CONFIDENTIALITY

Apart from reflecting the outcome of each accreditation evaluation in the list of recognised National Diploma: Engineering and B Tech Engineering Degrees, in terms of clause 13 of the Engineering Profession Act 46, ECSA will under no circumstances divulge details of investigations, documentation, correspondence and discussions between ECSA, the accreditation team and the University of Technology concerned without the approval of the University of Technology concerned.

### 1.10 LIST OF ACCREDITED QUALIFICATIONS

Annually ECSA publishes a list of all qualifications accredited at that time and in the past. The list shows the initial year of the accreditation period(s). In the case of a programme no longer accredited, the termination date will also be shown.

Dates of validity of accreditation refer to the academic year in which the individual completes the requirements to obtain the qualification, including re-examination early in the following year.

Universities of Technology are expected to inform the learners of the current accreditation status of each National Diploma: Engineering, B Tech Engineering Degree programme and changes to the status of the accreditation of these programmes.

Universities of Technology are encouraged to publish the status of the ECSA accredited National Diploma: Engineering and B Tech Engineering Degree, which they offer.

Any applicant applying for registration as a Candidate who has obtained a qualification during a period when accreditation has been withdrawn will be required to attend an interview to ascertain the level of academic achievement.

#### 1.11 DELEGATION OF AUTHORITY TO GRANT, WITHHOLD OR WITHDRAW ACCREDITATION LEADING TO REGISTRATION

ECSA Council delegates authority to the TPAC to grant accreditation to National Diploma: Engineering and B. Tech. Degree programmes.

Council delegates authority to its Executive Committee to withdraw accreditation of the National Diploma: Engineering and B Tech Engineering Degree programmes on the recommendation of the TPAC. EXCO may refer any case to Council for a final decision.

The TPAC will in addition:

- Consider and develop policy matters relating to accreditation of University of Technology qualifications for recommendation to the Education Committee (EC) and Council
- Maintain guidelines on accreditation policy and practice
- Approve accreditation visit schedules, reporting deadlines and meeting dates
- Maintain a list of past and potential members of accreditation teams
- Call for nominations in consultation with the professional bodies, and other stakeholders.
- Appoint the accreditation teams
- Take responsibility for the training of the accreditation team
- Through the visit leader, appoint the team leaders for the discipline/branch accreditation teams for each qualification
- Brief the teams prior to the visits
- Approve observers who attend accreditation visits on behalf of ECSA
- Consider all reports by accreditation teams
- Grant or withhold full term and provisional accreditation of qualifications
- Recommend withdrawal of accreditation to the Council/EXCO
- Note and record expiry of accreditation periods without the University of Technology initiating an accreditation visit as specified in section 1.6 and to report such expiry to Council/EXCO
- Issue annually a list of accredited qualifications from University of Technology
- Report to Council/EXCO decisions taken in terms of delegated powers
- Promote and monitor activities providing mutual verification of accreditation standards among ECSA and associated accrediting bodies

- Report on trends or other matters of professional and public concern arising from its deliberations
- Liaise with other bodies on accreditation matters in terms of the Engineering Profession Act.

### 1.12 REPORTING SEQUENCE

Where the documentation or information provided either prior to the accreditation visit or on-site is deficient, the team leader may, before or during the visit, call for such information to be provided within a specified period. The finalisation of the report may be delayed until the information is provided.

Preparation and processing of the report follow the sequence shown below. The TPAC sets critical dates for completion of the various stages:

- The accreditation team will prepare a draft report, and discuss it with the Head of Department, of the University of Technology by the close of the visit. The report is circulated to all the members of the team for comment
- The report and recommendations of the accreditation team will be submitted to the dean of the faculty for comment. The primary objective is to ensure that the report is free from factual errors
- The report, returned by the Dean, is approved on behalf of the team by the leader and submitted first to the Visit Leader then to the TPAC
- If the decision of the TPAC is to grant or withhold accreditation, the decision is final in terms of Council's delegated powers
- If the decision of the TPAC is to recommend withdrawal of accreditation, the report and TPAC recommendation are forwarded to the Executive Committee for a decision
- The Chief Executive Officer informs the University of Technology of the decision by letter
- When conditions are specified to address deficiencies the Universities of Technology will be required to indicate within a reasonable but specified time whether it is in a position to make the changes required, failing which, the accreditation shall expire and the procedures detailed in section 1.6 shall apply
- The EXCO and Council shall be informed of all recommendations made and decisions taken by the TPAC

### 1.13 APPROACH

Evaluation visits for accreditation are conducted in an open and professional manner.

### 1.14 COSTS

100% of the cost will be recovered from the Universities of Technology for the accreditation visit.