Institution of Engineers Mauritius

"CRITERIA FOR ACCREDITATION OF ENGINEERING DEGREE PROGRAMMES MEETING STAGE-1 OF CRPE REGISTRATION REQUIREMENTS"
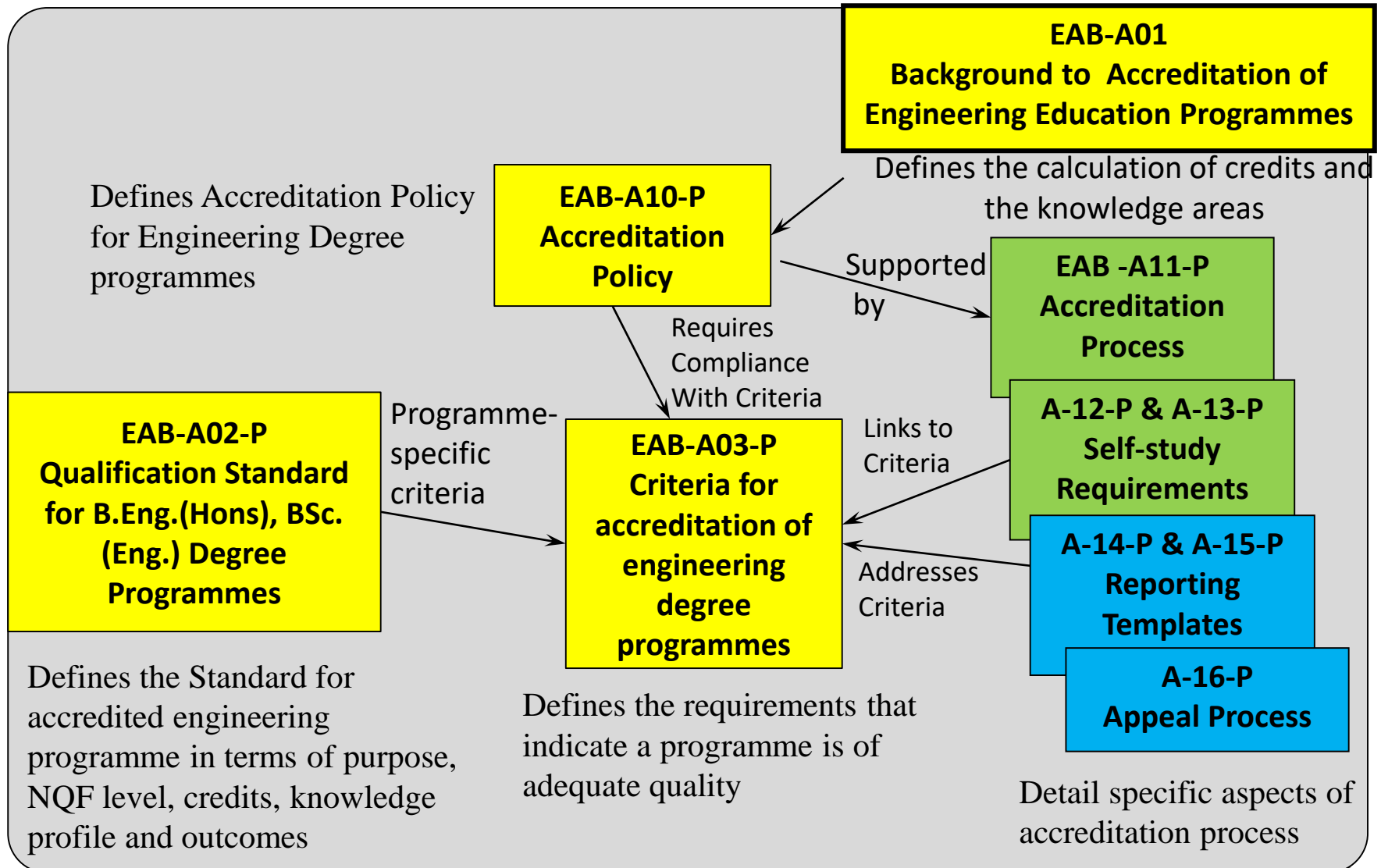
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Documents Defining the EAB Accreditation

EAB-A01
Background to Accreditation of Engineering Education Programmes

Defines Accreditation Policy for Engineering Degree programmes

EAB-A10-P Accreditation Policy

Defines the calculation of credits and the knowledge areas

Supported by

EAB -A11-P Accreditation Process

Requires Compliance With Criteria

EAB-A02-P Qualification Standard for B.Eng.(Hons), BSc. (Eng.) Degree Programmes

Programme-specific criteria

EAB-A03-P Criteria for accreditation of engineering degree programmes

Links to Criteria

A-12-P & A-13-P Self-study Requirements

Addresses Criteria

A-14-P & A-15-P Reporting Templates

A-16-P Appeal Process

Defines the Standard for accredited engineering programme in terms of purpose, NQF level, credits, knowledge profile and outcomes

Defines the requirements that indicate a programme is of adequate quality

Detail specific aspects of accreditation process

Purpose of EAB-A03-P

Accreditation criteria are the generic set of requirements (based on standards defined in EAB-A02-P) that, when fully met by a programme, indicate that the programme is of adequate quality, including the curriculum, learning outcomes achieved (i.e. meeting the Graduate Attributes), educational process, resourcing and sustainability for the intended purpose.

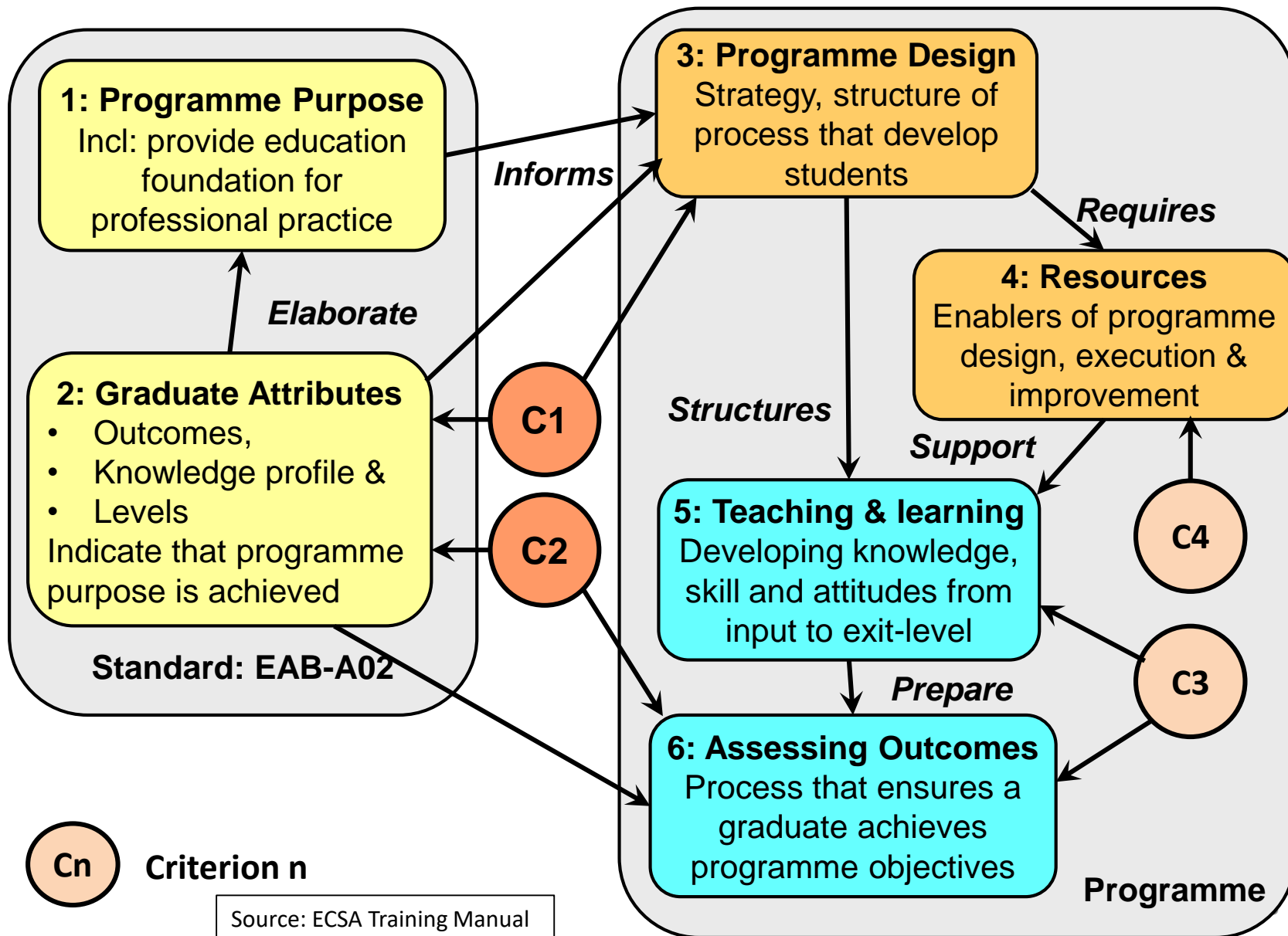## IEA Criteria For Accredited Programmes

The IEA criteria for accreditation include requirements for:

1) Programme outcomes that are consistent with the purpose of the programme;

2) A curriculum providing a broad basis for engineering practice;

3) A suitable environment to deliver the programme;

4) Adequate leadership for the programme;

5) Suitably qualified engineering practitioners teaching in the programme;

6) Appropriate entry and progression standards; and

7) Adequate human, physical and financial resources for the programme.

Link between standards and accreditation criteria

1: Programme Purpose
Incl: provide education foundation for professional practice

Elaborate

2: Graduate Attributes
- Outcomes,
- Knowledge profile &
- Levels

Indicate that programme purpose is achieved

Standard: EAB-A02

3: Programme Design
Strategy, structure of process that develop students

Informs

Requires

4: Resources
Enablers of programme design, execution & improvement

Structures

Support

C1

C2

5: Teaching & learning
Developing knowledge, skill and attitudes from input to exit-level

C4

C3

Prepare

6: Assessing Outcomes
Process that ensures a graduate achieves programme objectives

Programme

Cn Criterion n

Source: ECSA Training Manual

Main Elements of EAB-A03-P

EAB accreditation criteria are defined for three stages in the lifecycle of a programme: planning, students at halfway point, and producing graduates.

EAB-03-P defines

Section 3: the criteria that must be satisfied by an existing programme that has produced a cohort of graduates; they are:

CRITERION 1: Programme Educational Objectives, Credits, Knowledge Profile, and Coherent Design

CRITERION 2: Assessment of Graduate Attributes

CRITERION 3: Quality of Teaching and Learning Processes

CRITERION 4: Resourcing and Sustainability

Section 4: CRITERION 5 which is the HEI's response to *Previously Identified Deficiencies and Concerns*, *Capacity for Improvement* and *Programme Review*.

Main Elements of EAB-A03-P

Section 5 defines the criteria for Provisional Accreditation of Developing Programmes that have not yet produced a Cohort of Graduates, but that have achieved at least one-half of the academic credit units for the programme.

Section 6 defines how the criteria are applied to a proposed new programme submitted for Initial Evaluation. Proposed and developing programmes must be planned to meet the accreditation criteria.

Section 7 defines criteria for Programmes submitted for *Desktop Evaluation*.

Criterion 1: Programme Educational Objectives, Credits, Knowledge Profile and Coherent Design

The programme must be planned and executed to have:

- PEOs that are consistent with the mission of the institution, requirements of stakeholders, the Programme Outcomes, and the expected achievements of graduates in their professional life a few years after graduation. The PEOs must be considered in the design and review of the curriculum.

- Total (minimum) credits and knowledge profile, in respect of the Mathematical Sciences, the Natural sciences, Engineering Sciences, Design & Synthesis, and the Complementary Studies, as specified in EAB-A02-P;

- A coherent core of mathematics, natural sciences and engineering fundamentals appropriate to the purpose of the programme;

Criterion 1: Programme Educational Objectives, Credits, Knowledge Profile and Coherent Design (continued)

- Specialist engineering study at exit level;

- A minimum (8 weeks) continuous period of Industrial Training/Work Based learning to be completed before the final semester;

- Laboratory experience. Laboratory work should be designed to complement learning through theory. Instruction in safety procedures must be included.

- A Final Year (Capstone) Project.

- A designation (qualifier) consistent with the programme's purpose and engineering sciences content;

Criterion 1: Programme Educational Objectives, Credits, Knowledge Profile and Coherent Design (continued)

- Explicit rules of combination and progression from entry to graduation. Entry requirements for and process of admission of students, including alternate entry mechanisms (including foundation programmes, credit transfer and/or exemption, recognition of prior learning) to the programme must be explicit and published;

- Explicit horizontal and vertical articulation options: policies and rules for moving at the same levels or to another between programmes.

Criterion 2: Assessment of Graduate Attributes

The Programme Outcomes are mapped against the Graduate Attributes indicating the specific module and the academic cycle (or semester) in which each attribute is developed and explicitly addressed.

The assessment process within the programme must:

- Ensure that all graduates satisfy each graduate attribute;

- Use a documented set of assessment criteria and processes that, taken together, demonstrate that the attributes are satisfied at the level indicated by the range statement;

- Evaluate the degree of achievement of Programme Outcomes by the students. The results of this process shall be applied for continuous improvement of the programme.

Criterion 3: Quality of Teaching & Learning Processes

The programme must provide an effective teaching and *learning* process toward achievement of the *outcomes* as evidenced by the following:

- The content, *learning* objectives, expected *outcomes* and method of *assessment* for each module of the programme are defined and documented and are available to staff and students.

- For each Graduate Attribute (GA), the modules in which GA *assessment* takes place, the method of assessing the GA and the level of achievement required of the students must be provided.

- The teaching and *learning* strategy and methodology is designed to achieve the *outcomes* of the programme with students who meet the stated admission criteria.

Criterion 3: Quality of Teaching & Learning Processes (continued)

- Suitable *learning* opportunities are provided to facilitate the acquisition of knowledge and skills specified in the programme outcomes.

- Effective programme co-ordination by full-time staff.

- The *learning* process encourages independent learning attitudes and abilities, and an appropriate mix and balance between different teaching and learning methods is maintained to encourage active participation of students in the teaching and learning process.

- The *learning* progress of students is appropriately monitored and where necessary, academic development support is provided to students through structured and monitored interventions.

- *Assessment* practices and procedures provide feedback to students at regular intervals

Criterion 3: Quality of Teaching & Learning Processes (continued)

- An *internal* process including *moderation* ensures that all forms of summative *assessment* of student performance within programme are effective, fair, rigorous and address the stated learning objectives and outcomes.

- GA *assessment* is subject to *external moderation*.

- The teaching and learning process is *monitored* by an effective *quality assurance* process that supports *continuous improvement*.

- Student retention and throughput rates are *monitored* and measures are taken to identify and address factors that adversely affect throughput.

Criterion 4: Resourcing and Sustainability of the Programme

The programme must be adequately planned, resourced, led and executed to ensure that it is sustainable over the period of accreditation.

- The level of selection of *students* is commensurate with the programme's academic requirements.

- The number of *student*s admitted takes into account the capacity of the programme to offer good quality education and to meet professional requirements.

- The selection and admission of *students* is linked to the institution's equity and diversity plans.

- The *staff* members responsible for leadership, planning and assessment at the exit level are professionally and technically competent in the respective disciplines. Registration with CRPE as PE provides the norm for professional standing.

Criterion 4: Resourcing and Sustainability of the Programme (continued)

- The academic *staff* responsible for the programme are suitably qualified, have assessment competence and possess sufficient and relevant knowledge and teaching experience to implement the outcome-based approach to education

- The academic *staff* members have the range of specialities and abilities to teach at specialist and fundamental and are expected to hold a post-graduate degree at least for teaching the core and specialist modules.

- *Staff* members have research profiles relevant to the programme.

- Academic *staff* teaching modules that are primarily design in content are qualified to teach the subject matter by virtue of education and experience or professional registration.

- *Staff* members supervising the Final Year Capstone Project should have relevant educational qualifications, and preferably, professional registration.

Criterion 4: Resourcing and Sustainability of the Programme (continued)

- The number of academic and support *staff* is sufficient for the programme
    i.   at least 8 academic staff of whom at least 4 should be engaged on full-time basis and whose first degree must be in the appropriate engineering discipline.
    ii. at least one full-time member holding professional engineering registration with CRPE or a Washington Accord signatory. Staff teaching engineering design or supervising Final Year projects have industry experience or are engaged in engineering consultancy if not holding a professional registration.
    iii. the full-time equivalent academic staff to student ratio shall ideally be 1:20 or better to enable an effective delivery of teaching and learning while at the same time enabling faculty-student interaction.
- *Staff* members have *research* profiles relevant to the programme.
- Appropriate *research* development opportunities and programmes for *staff* members are in place.

Criterion 4: Resourcing and Sustainability of the Programme (continued)

- Laboratory and Library Facilities

- Institutional support and Financial Resources

- Academic Development of students
    - programmes are designed to match the students' state of preparation and progression towards the main programme;
    - staff responsible for the academic development programmes are adequately qualified, experienced and skilled;
    - the academic development programmes are quality assured.

Criterion 4: Resourcing and Sustainability of the Programme (continued)

- **Governance and Impact**
  - **effectiveness of the programme in meeting its objectives** are assessed at regular intervals to improve programme design, delivery and resourcing and provide for staff development and student support.
  - governance structure of the programme must assign **authority and responsibility for the formulation and implementation of policies** that enable the programme to fulfill its mission.
  - the **organizational structure** within the HEI and all **decision-making processes** must support the **achievement of programme educational objectives and programme outcomes**.

- **Continuous Improvement**
  - The HEI must provide resources for the operation and implementation of **mechanisms for assuring and improving its quality** to demonstrate the continual improvement process.

Criterion 5: Response to Previously Identified Deficiencies and Concerns, Capacity for Improvement and Programme Review

- Deficiencies and concerns identified at the previous visit must be adequately addressed:
  - (a) In the case of an Interim Report, Interim Visit or Final Visit:
    - A statement indicating how the deficiencies identified at the previous visit have been remedied;
    - A statement of major changes to the programme, which are unrelated to the deficiencies
  - (b) If concerns were expressed in the decision letter of the previous visit:
    - the provider's response to these concerns must be detailed.

Section 5: Criteria for Provisional Accreditation of Developing Programmes that Have Not Yet Produced a Cohort of Graduates

Programmes that have achieved at least one-half of the academic credit units but have not yet delivered a cohort of graduates.

The programme must:

1) Satisfy CRITERION 1 as demonstrated by the implemented part of the programme and as documented by the part of the programme not yet implemented;

2) Present a detailed assessment plan that demonstrates how the programme intends satisfying CRITERION 2;

3) Present evidence of teaching and learning effectiveness against the sub-criteria of CRITERION 3:

   (a) drawn from the part of the programme already implemented and

   (b) in the form of a plan for achieving effective teaching and learning for the remainder of the programme;

Section 5: Criteria for Provisional Accreditation of Developing Programmes that Have Not Yet Produced a Cohort of Graduates (continued)

4) Present evidence of adequate resourcing and sustainability of the programme against the sub-criteria of CRITERION-4. In particular, resources (once-off and ongoing) already available, committed and requested for the programme against the sub-criteria of CRITERION 4 must be adequate.

5) Demonstrate the effectiveness of measures taken to address concerns raised during the Initial Evaluation.

Section 6.1: Criteria for New Programmes submitted for Initial Evaluation

An Initial Evaluation on a new programme considers the extent to which the programme:

1) Satisfies CRITERION 1, as judged from a fully detailed proposed programme;

2) Presents a detailed assessment plan that demonstrates how the programme intends satisfying CRITERION 2;

3) Presents a detailed plan for achieving teaching and learning effectiveness against the sub- criteria of CRITERION 3;

4) Presents evidence of planning and institutional commitment to the programme and providing resources for both start-up of the programme and on an ongoing basis against CRITERION 4.

Section 6.2: Criteria for New Programmes submitted for Simplified Initial Evaluation

Where a programme qualifies for Simplified Initial Evaluation only CRITERION 1 is considered.

Section 7: Criteria for Programmes Submitted for Desktop Evaluation

A programme submitted for Desktop Evaluation is judged against Criteria 1 to 4, and 5 if a resubmission is under consideration.

THANK YOU