



**INSTITUTION OF ENGINEERS,  
SRI LANKA.**

**MANUAL FOR RECOGNITION OF FOUR YEAR ENGINEERING DEGREES CONDUCTED IN  
SRI LANKA**

June 2014

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## R1.0 INTRODUCTION

The Institution of Engineers, Sri Lanka (IESL) oversees the Engineering Profession in Sri Lanka, and in accordance with its Charter and provisions of the Act No. 17 of 1968, is empowered to admit to membership, classify and confer titles indicating the professional standing of its members. In fulfilment of its Charter obligations IESL has been responsible for the accreditation of engineering education programmes in Sri Lanka and in providing consultative feedback on the development of engineering education programmes comparable to global practice.

IESL evaluates undergraduate engineering degree programmes and accords accreditation in accordance with established criteria and procedures, through its Accreditation Board. However, where the degree programmes do not qualify for accreditation due to failure to attain all the requirements stipulated, or if the institutions offering the engineering programmes prefer to apply for recognition of the degree, the IESL accords recognition to such degree programmes in accordance with established criteria and procedures.

This Manual outlines the criteria and procedures for recognition of an Honours (or special) engineering education programme of four year duration by the IESL.

## R2.0 DEFINITIONS

### R2.1 GENERAL

IESL / Institution	-	The Institution of Engineers, Sri Lanka
IESLAB / Board	-	The Institution of Engineers, Sri Lanka Accreditation Board
Panel	-	A team of evaluators appointed to undertake recognition activities
PES	-	Programme Evaluation Subcommittee of the Education Standing Committee of IESL

### R2.2 STUDY PROGRAMMES

University	-	An institution of higher learning authorised by legislation (either directly or indirectly) to award professional engineering degrees.
Faculty	-	The entity responsible for academic administration and conduct of different engineering education programmes at the University.
Department	-	The entity responsible for the design and conduct of the programme to be accredited.
Institute	-	University / Faculty / Department applying for the recognition of an Engineering Study Programme is referred to as the 'Institute' in this document
Programme	-	The sequence of structured educational experience undertaken by the students, leading, on completion and on satisfactory assessment of performance, to the award of an engineering degree.
Degree	-	A graduate level engineering qualification normally of four years' duration
Academic staff	-	The staff responsible for teaching in the programme leading to the award of the degree.
Visiting staff	-	Staff from other universities and / or practising engineers giving instructions on a part-time basis.
Assessment	-	Judgement of a student's work by the Institute.
Evaluation	-	Judgement of the engineering programme by the Institution or its appointed agency.
Stakeholders	-	All groups with key interest in engineering education and its outcome.
External Examiner	-	A suitable person with high academic standing outside the Institute, who scrutinises and reports on examination and assessment
OBE	-	Outcomes Based Education
ICC	-	Industry Consultative Committee: a body consisting of professionals from industries, government, professional organisation, regulatory, alumni, etc., appointed by the Institute to ensure the programme's relevancy to the stakeholders' needs.

## R2.3 ACCREDITATION AND RECOGNITION

Accredited Degree -	A degree eligible for graduate registration similar to other Washington Accord signatory countries and for professional registration with the Institution similar to other signatory countries of the International Professional Engineers Agreement after satisfying its training, experience and other requirements.
Recognised Degree -	A degree eligible for graduate registration after satisfying conditions stipulated by the Institution if any, and for award of the IESL Charter after satisfying its training, experience and other requirements.
Period of Recognition-	For a programme that fully satisfies the minimum standard for recognition set by the IESL, recognition is normally given for 05 years; at the end of this period either it has to be renewed or application requires to be forwarded for accreditation

## R3.0 EVALUATION PANEL

An evaluation panel is appointed by the Council of the IESL on the recommendation of the Education Standing Committee for making the evaluation, and it must consist of:

- a Chairperson, who is a well recognized engineering practitioner or a senior academic,
- at least two other members, typically chosen for their broad experience in engineering and their ability to evaluate the generic programme outcomes and quality systems

The panel shall include at least two members with extensive academic experience and one member with extensive experience in employing practising graduate engineers. At least one member of the panel shall be conversant with the field of study of the programme being evaluated. All of the panel members must be Chartered Engineers.

## R4.0 POLICY ON RECOGNITION

### R4.1 THE PURPOSE OF RECOGNITION

Institute education provides the learning base on which each engineer's professional career is built. The engineering profession requires its members to have competence in engineering, as well as an understanding of the effects of engineering on the society and the environment. The purpose of recognition is to ensure that the engineering education programme concerned imparts the minimum academic requirements needed for an individual to register with the Institution as a graduate engineer. The processes of recognition place emphasis on the quality of the students, academic staff, support staff and teaching facilities. It is about continual improvement of engineering programs.

Recognition thus provides public knowledge of engineering education programmes that guarantee successful students of entry into the profession, and gives an assurance to prospective students on the entry into the profession. It gives a feedback to the Government and the Institute of the basic requirements of a graduate engineering education programme, and the level of resources reasonably needed to meet these requirements.

In case an evaluated programme is found to be lacking certain necessary attributes for recognition, the evaluation will result in a review of the present situation and recommendations for improvement with time targets for achievement in order to satisfy the required standard for recognition.

## R5.0 REQUIRED ATTRIBUTES OF A GRADUATE

The skills, knowledge and attitude that are expected from the graduates of a Four year Bachelors degree programme meeting the educational requirements towards registration as a Chartered Engineer of the Institution of Engineers, Sri Lanka are listed under several headings as given below. These have been developed based on the generic attributes outlined in the IESL Professional Review Rules, and are to be attained by an engineering graduate from any study programme, irrespective of the engineering discipline. The graduates are expected to successfully fit into society, satisfying the needs of the employers and the industry. The attributes required of an engineering graduate are:

- (i) Apply knowledge of mathematics, basic sciences and engineering fundamentals to the analysis of complex engineering problems.
- (ii) Identify, formulate, research literature, conduct investigations and solve complex engineering problems to provide valid conclusions.
- (iii) Design systems, components or processes that meet specified needs.
- (iv) Conduct investigations of complex problems using research based knowledge and research methods.
- (v) Create, select and apply appropriate techniques, resources, and modern engineering and IT tools to complex engineering activities.
- (vi) Assess societal, health, safety, legal, cultural and environmental issues related to professional engineering solutions.

- (vii) Demonstrate broad knowledge of sustainable development concepts and practices required for dealing with contemporary issues related to professional engineering practice.
- (viii) Demonstrate broad knowledge of ethical responsibilities and professional standards.
- (ix) Demonstrate ability to function effectively as an individual and in multidisciplinary and multi cultural teams, with the capacity to be a leader or manager as well as an effective team member.
- (x) Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- (xi) Demonstrate broad knowledge of management and business practices, including financial management, risk and change management.
- (xii) Engage in independent and lifelong learning in the broad context of technological change.

## R6.0 STRUCTURE AND CONTENT OF THE ACADEMIC PROGRAMME

### R6.1 DEFINITIONS OF ACTIVE HOURS (AHs) AND ACADEMIC CREDITS (ACs)

For an academic activity that is granted academic credit, and in which the number of hours associated with it corresponds to the actual contact time of that activity, such as lectures, tutorials, laboratory, design or fieldwork, an Active Hour (AH) is defined as follows:

- one (1) hour of lecture
- two (2) hours of tutorial, laboratory, design or field work

One AH continued over the duration of a semester is defined as an Academic Credit (AC). (One (1) AC is equivalent to about fourteen (14) AHs. However, in the case of Open and Distance Learning, One (1) AC is considered equivalent to about twenty five (25) AHs)

For activities in which contact hours cannot be used to properly describe the extent of the work involved, such as project study, work camps and industrial training, the following definitions are used for an AC:

- one (1) week of project study
- two (2) weeks of work camp
- four (4) weeks of industrial training.

It is appropriate for the programme structure to be designed in such a way that gives a progressive shift of emphasis from engineering science and principles in the early stages to more integrated studies in the final year.

The essential elements are grouped under three headings.

#### (a) Mathematics, Basic Sciences and Computing (Minimum of 25 ACs)

Mathematics should include appropriate elements of linear algebra, differential and integral calculus, differential equations, probability, statistics, numerical analysis and discrete mathematics. Some of the mathematical techniques may be taught within other subjects in the programme where they are relevant.

The basic sciences component of the curriculum must include elements of physics and chemistry, and other relevant elements of sciences. These subjects are intended to impart an understanding of natural phenomena and relationships through the use of analytical and / or experimental techniques.

#### (b) Engineering Sciences and Engineering Design (Minimum of 75 ACs)

A combination of engineering sciences engineering design and projects and exposure to professional practice is recommended. Of this a minimum of 25 ACs must be engineering design and projects; and a minimum of 25 ACs must be an engineering discipline specialisation.

Engineering science subjects would normally have their roots in basic sciences and mathematics, but carry knowledge further towards creative applications. They may involve the development of mathematical or numerical techniques, modelling, simulation and experimental procedures. Application to the identification and solution of practical engineering problems is stressed. In addition to engineering science subjects pertinent to the discipline, the curriculum must include engineering science content, which imparts an appreciation of important elements of other engineering disciplines.

Engineering design integrates mathematics, basic sciences, engineering sciences and complementary studies in developing elements, systems and processes to meet specific needs.

The engineering curriculum must end with a significant design experience, which is based on the knowledge and skills acquired earlier. Such an exercise is expected to give the student an exposure to the concepts of teamwork and project management. The final year project is required to demand individual analysis, judgement as well as teamwork. Each student should be assessed independently from the work of others. The student is expected to develop techniques in literature review and information gathering.

The engineering sciences and engineering design components of the curriculum must include appropriate content, which requires the application of relevant software.

**(c) Complementary Studies (Minimum of 20 ACs)**

A minimum of fifteen (15) academic credits for studies in management, engineering economics, professional ethics and communication and five (5) academic credits in humanities, social sciences, and arts are recommended to complement the technical content of the curriculum.

**R6.2 EXPOSURE TO PROFESSIONAL ENGINEERING PRACTICE**

Industrial training in a practical engineering environment, directly assisting professional engineers, would give the student a valuable insight into professional practice. Such experience would complement the formal studies at the educational establishment, and should ideally consist of several different types of experience. This must include practical experience in the basic manufacturing and construction techniques applicable to the student's chosen discipline of engineering. The opportunity to observe human and industrial relations, job organisation, maintenance, safety and environmental procedures from the point of view of the general workforce is an important component in the early preparation for a career as a professional engineer.

Each undergraduate shall undergo industrial training for a period of not less than twelve (12) weeks, and submit a report on the training certified by the employer's representative to enable assessment and the award of credits. The academic credits obtained for industrial training (subject to a maximum of six ACs) is considered under the category of engineering sciences, engineering design and projects. These credits may be acquired by alternative methods of exposure to the working environment provided there is a satisfactory scheme of assessment and award of credits specified in the curriculum.

**R7.0 ACADEMIC STAFF AND STUDENTS**

**R7.1 ACADEMIC STAFF**

The character of the educational experience of the student is greatly influenced by the competence and outlook of the academic staff. The number of staff devoted to the programme must be large enough to cover, by experience and interest, all curricular areas of the programme. The Institute may engage part-time or visiting staff members, who are outstanding professionals in their fields, to cover certain subject areas in the curriculum outside the specialisations of the full-time staff.

The academic staff teaching courses in the engineering curriculum are expected to have a high level of competence, and to be dedicated to the aims of engineering education. In general, the academic staff should have a postgraduate degree, preferably at doctoral level. However, staff with a good first degree, and having wide industrial experience along with other acceptable professional qualifications, may be considered to give an industrial flavour to the programme. This category of staff without adequate research experience should be encouraged to obtain such experience after recruitment. Academic staff without industrial experience and professional qualifications should also be encouraged to obtain them after recruitment. The overall competence of the Institute will be judged by such factors as the level of academic education of its members, the diversity of their backgrounds, their ability to communicate effectively, their experience in teaching and research, their level of scholarship as shown by scientific and professional publications, their degree of participation in professional, scientific and learned societies and their personal interest in the students' curricular activities.

The teaching loads of academic staff should allow adequate time for participation in research and professional development activities. The Institute must ensure a balanced and conducive environment for effective teaching, research and professional development. The academic staff of the engineering Institute must provide proper curricular and career counselling to the students.

To ensure effective teaching, the equivalent full-time academic staff to student ratio should be maintained at 1:12, or better. There must also be a sufficient number of trained and qualified members of the technical and administrative staff to assist in the conduct of the educational programme. The staff to student ratio is to be calculated as set out in Appendix RA.3.10.6. (In the case of open and distance learning, the academic staff to student ratio may be lower than stated above.)

**R7.2 STUDENTS**

Students pursuing engineering education programmes must have a sound understanding of mathematics and physical sciences. Students should have achieved a level of achievement at least equal to the UGC entry requirements for engineering studies or higher, at the General Certificate of Education (Advanced Level) examination conducted by the Department of Examinations of Sri Lanka in the mathematics stream, or through an equivalent qualification recognized by the IESL. The students also need to acquire English language skills to follow the course in English medium and possess competency in the use of computers and IT skills. The Institute must ensure that any student who does not meet these criteria would undertake additional suitable remedial programmes in order to attain the equivalent entry qualification.

### **R7.3 TEACHING FACILITIES**

The quality of the environment in which the programme is delivered is important as it influences the quality of educational experience gained by students. Therefore, there must be an adequate number of suitable classrooms, audio-visual and projection facilities, study areas, information resources (library), computing and information technology systems, and general infrastructure to meet the programme's objectives. This must enable students to learn the use of modern engineering and organisational tools, and explore beyond the formal dictates of their specific programme of study.

For programmes offered at multiple or remote locations, and those offered partly in the distance mode, sufficient communication facilities must be provided to give those students a learning experience and support equivalent to that of the on-campus students. There must also be adequate facilities for student-staff interaction. On-campus students should be encouraged to participate in the other activities of the Institute, and reasonable effort should be made to provide similar opportunities for other students.

Laboratories and workshops should be adequately equipped for experiments and "hands-on" experience in the area of the core subjects. Appropriate experimental facilities must be available for students to gain substantial experience in understanding and operating engineering equipment, and in designing and conducting experiments. The equipment must be representative of engineering practice, including computerised equipment and current software where possible. Laboratory experiences must provide students with 'hands-on' experience and not just demonstrations. Where practical work is undertaken at another Institute, or in industry, arrangements must be made to provide reasonable accessibility and opportunities for learning.

### **R7.4 QUALITY MANAGEMENT SYSTEM**

#### **R7.4.1 Strategic Statement, Institutional Support and Leadership**

The Institute must demonstrate that it regards a quality engineering education as a significant and long-term component of its activities. This would most commonly be reflected in the Institute's mission statement and in its strategic plans. It must have adequate policies and mechanisms for planning, development, delivery and review of engineering education programmes, and for academic and professional development of staff.

The Institute must have in place adequate policies and mechanisms for funding the programme; for attracting, appointing, retaining and rewarding well-qualified staff, and providing for their ongoing professional development; and for providing and updating infrastructure and support services. It must ensure that creative leadership is available to the Institute through the appointment of well-qualified and experienced senior staff in sufficient numbers.

#### **R7.4.2 Scheme of Assessment of the Programme of Study**

The Rules and Regulations for assessment procedures of the programme of study approved by a high level academic body must be made available and maintained by the Institute.

The Institute should be able to demonstrate its management system for assessment of students, which should include:

- (a.) examination regulations;
- (b.) system of assessment and criteria for a Pass and Grades;
- (c.) procedures for preparation of examination papers;
- (d.) standard of examination papers;
- (e.) assessment and moderation procedures for final year projects, and;
- (f.) assessment of industrial training.

The Institute should have one or more external examiners for each programme of study to independently scrutinise and report on examinations and assessment in each academic year. All external examiners' reports shall be made available to the panel.

### **R8.0 RECOGNITION PROCEDURE**

Any study programme in engineering aiming at producing graduates who are expected to be employed as engineers in Sri Lanka should be of at least four year duration, which should be recognized or accredited by IESL in order for its graduates to be eligible for registration as graduate engineers and subsequently registered as Chartered Engineers.

The recognition procedure of the IESL normally comprises the steps indicated in the following sections.

#### **R8.1 APPLICATION FOR RECOGNITION**

An assessment is initiated only at the request of the Institute that conducts the programme of study concerned.

- In the case of a programme of study applying for recognition for the first time, the request must be made not less than six (6) months before a batch of students is graduating, in order for the graduating batch to be recognized for graduate registration.

- In the case of a programme of study that has previously been recognized, such request must be made not less than six (6) months before the recognition lapses.

Once the request is received, the IESL Secretariat sends to the applicant institution the format and information on the documentation required for the evaluation. This documentation includes information on the Institute, the programme of study, the staff, students, teaching facilities and quality assurance systems (Appendix A). The completed documents along with any additional supporting documents must be returned to the IESL, which will acknowledge receipt of the same. The documentation may be sent in both electronic and hard copy format (3 copies), at least twelve (12) weeks before the proposed date of the evaluation visit.

If the IESL is satisfied that the information provided is adequate, the Executive Secretary will communicate to the relevant institution details regarding the visit. Any additional information requested must be received within two (2) weeks. If the information is considered to be inadequate, further information is requested from the institution before an evaluation visit could be scheduled. If the requested information is not received within a further period of two (2) weeks, the application shall be deemed to have been withdrawn.

The Evaluation Panel (Visiting Team) appointed by the IESL, would normally meet four – five (4-5) weeks prior to the evaluation visit. The purpose of the meeting is to provide an opportunity for panel members to share their initial findings after consideration of the submitted documentation. It would also enable the panel to collectively identify matters targeted for detailed investigation during the visit and to identify any additional data or materials that may be required in order to facilitate the evaluation process. The panel will also discuss a draft schedule for the visit proceedings.

A brief meeting report will be normally be compiled, recording any issues of concern, key matters to be addressed during the visit and any request by the panel for additional supporting information. The Executive Secretary will communicate the request to the Institute. This requested material must be received at least one (1) week prior to the evaluation visit.

Included with the meeting report will be a draft visit schedule detailing various sessions and activities proposed for the visit. This schedule will be subsequently finalised in negotiation with the Institute.

A meeting of the Evaluation Panel will normally be held on the evening prior to the commencement of the visit. This meeting will enable the panel to make final preparations for the visit, to consider any additional supporting information submitted by the educational institution and to prepare strategic questions in readiness for each of the visit sessions

The full cost of evaluation for recognition must be borne by the Institute requesting evaluation for the programme.

## **R8.2 EVALUATION VISIT**

The Evaluation Panel makes the visit to the Institute that offers the programme. The visit will extend over a period at least one full day, during which the visiting team gets an opportunity to assess qualitative factors such as intellectual atmosphere and morale in the Institute, professional attitudes and the quality of staff and students. During this visit the team gets the opportunity to carry out the following activities.

- Interviews with senior administrative officers including the Vice-Chancellor/ Head of Institute, the Dean of Engineering and the Head of the Department responsible for conducting the programme of study.
- The Head of Department or Dean is expected to make a 5 minute presentation, summarising, but not repeating the submission documentation.
- Interviews with members of the academic staff to evaluate professional attitudes, motivations, morale and their opinions on the theoretical and practical elements of the curriculum.
- Interviews with students, individually and in groups.
- Interviews with non-academic staff to assess their competence in supporting the academic programmes
- Informal meeting with Alumni and employers
- Visits to physical features such as laboratories, workshops, libraries and computing facilities to evaluate their adequacy and effectiveness.
- A review of recent examination question papers, external examiners' reports, laboratory instruction sheets, student transcripts (anonymous, if necessary), student coursework and project reports, models or equipment constructed by students, any other evidence of student performance for every module covered in the programme, staff research publications etc.

## **R8.3 REPORT OF THE VISITING TEAM**

The visiting team shall prepare a report of their findings on the programme of study and present to the IESL within a period of eight (8) weeks after the date of the visit (Appendix RC). This report covers perceived strengths and weaknesses of the programme, areas in which it conforms to and deviates from the evaluation criteria, as interpreted by the team, with recommendations on matters of concern and suggestions for improvement.

After review of the visiting team's report by the **Programme Evaluation Subcommittee** (PES) of the Education Standing Committee of the IESL, it will be sent to the Institute concerned by the Executive Secretary for their comments, and to ensure accuracy and completeness. The response of the Institute must be received by the IESL Secretariat within a period of four (4) weeks.

The Appendix RC revised by the **PES** will then be submitted to the Education Standing Committee of the IESL.



#### **R8.4 DECISION ON THE EVALUATION**

The Education Standing Committee of the IESL makes a recommendation on the recognition to the IESL by considering the visiting team report (Appendix RC) and any further clarifying correspondence by the Institute.

The Education Standing Committee of the IESL may recommend one of the following.

- To grant full recognition for a period of five (5) years.
- To grant conditional recognition for a shorter period (not more than two years) subject to receipt of a report that convinces the IESL that matters giving rise to its concerns have been adequately resolved. After reviewing this report, the IESL may recommend extending the recognition to the full five (5) years, or to terminate conditional recognition at the end of the period granted.
- To decline or terminate recognition, depending on whether it is a new programme or an already recognized programme.

Based on the recommendation made by the Education Standing Committee, the IESL Council makes its decision on recognition of the programme of study concerned.

The Institution's decision is conveyed to the Institute through the Dean of Engineering or equivalent Officer in the institute, who will be provided with a comprehensive explanation for it. The Institute is expected to inform the staff and the students of the recognition process and the recognition status of the programme of study.

When a particular programme of study is offered at different locations and / or through different modes of delivery, recognition status will apply only to the location and / or mode of delivery that has been reviewed. A separate application needs to be made in respect of the same programme offered at another location and / or through a different mode of delivery.

#### **R8.5 APPEALS FOR REVIEW**

In the event of a decision by the IESL to terminate the recognition of a programme or to decline recognition to an unrecognized programme, the Institute may appeal to the President of IESL for a review of its decision. This appeal must be made within four (4) weeks of receiving the decision of the IESL, stating the grounds on which it is based.

The IESL Council may then instruct the Education Standing Committee of the IESL to subject the programme to a second evaluation visit by a newly constituted visiting team, upon receipt of payments to cover re-evaluation costs. The same procedure will be followed by the new visiting team, which will report to the PES, for a recommendation to the IESL Council.

#### **R8.6 INFORMAL EVALUATION OR VISIT**

An Institute may request the IESL for an informal evaluation of a proposal for a new programme of study at an appropriate time during its development stage. The Education Standing Committee of the IESL will arrange an informal visit by a team for the purpose of providing comments and advice to the Institute with respect to the programme. However, no assurance will be given by the IESL as to the eventual recognition of the programme. The visiting team will present a report to the Institute, but no report will be presented to the IESL Council.

The cost of such evaluation / visit shall be borne by the Institute concerned.

#### **R8.7 PUBLICATION OF RECOGNITION STATUS**

The IESL will publish a list of recognized programmes of study, together with their effective dates, on an annual basis. The list maintained by the IESL includes only those programmes, which have received full recognition. This list is available on request.

The records and deliberations of the Education Standing Committee of the IESL and the IESL Council concerning recognition of a programme of study shall be kept confidential.

### **R9.0 METHOD OF ASSESSMENT FOR INDIVIDUAL APPLICANTS**

Individual applicants wishing to get their educational qualifications recognized for associate membership are required to submit all relevant documents including but not limited to the following:

- Proof of identity
- Secondary Educational Certificates (GCE O.L. and GCE A.L or equivalent)
- Proof of admission to the Institute
- Name and address of the a) Institute awarding the degree b) Institute/ Department/ College conducting the degree programme c) authority from whom confirmation can be obtained
- Institute Handbook, Prospectus, etc
- Curriculum and syllabi of programme
- Assessed Coursework, Project reports, Assignments, Question Papers, etc
- Industrial training reports and log book/ diary
- Transcripts of results of all semesters /years
- Degree Certificate/s
- Recognition from any professional body or bodies



The candidate will be evaluated based on the documents submitted and an interview to ascertain the academic standard, by a Panel of evaluators appointed by the Education Committee.

#### **R10.0 ACKNOWLEDGEMENT**

This Manual was prepared based on the Engineering Programme Accreditation Manual of the Institution of Engineers dated June 2011, as amended in March 2014.



**APPENDIX RA**

**DOCUMENTS TO BE SUBMITTED AND  
FORMAT OF SELF EVALUATION REPORT**

## APPENDIX RA

### DOCUMENTS TO BE SUBMITTED BY THE INSTITUTE CONDUCTING THE PROGRAMME

#### RA.1 INTRODUCTION

The documents as prescribed below must be submitted in respect of the programme being evaluated for recognition. It is the responsibility of the Institute conducting the study programme (hereinafter referred to as the Institute) to provide accurate information and sufficient evidence for the purpose of evaluation.

The documents must contain information on, but not limited to the following:

- general information and the objectives and outcomes of the programme;
- the ways in which the programme achieves the objectives, including development of the generic graduate attributes and the attributes appropriate to any specialist title, and assists each student to meet the required outcomes;
- teaching staff and students;
- teaching facilities;
- assessment and quality management system, and how it ensures that each graduand has met the required outcomes;
- the methods used to secure external validation and critical comment on the programme objectives and outcomes, and to apply such comment to the continual improvement of the programme and the Institute, and evidence of their effectiveness;
- any other relevant information.

It should not be necessary to develop extensive documentation specifically for the purpose of recognition. The purpose of recognition is to evaluate the systems already in place, not to require their creation. In a well-managed Institute, most of the documentation requested should already exist.

An acceptable submission is likely to comprise a collection of existing documents, including a text providing a coherent overview. The overview text should address each of the criteria, and refer to the relevant supporting material to the extent that existing documentation provides evidence that the criteria are met.

Submission must be comprehensive, easily readable, and free-standing. The overview text must address each major point in a definitive way. It will not be sufficient merely to provide a collection of disparate items, or point to a web site, and leave the Panel to find the relevant information and make the connection for itself. Supplementary information (such as QA policies, staff CVs, module outlines etc) can be provided on a CD.

#### RA.2 DOCUMENTS TO BE SUBMITTED

The Institute offering the programme should submit five (5) copies of its Self Evaluation Report (SER) based on Section RA.3 for recognition. The SER should be concise, but of sufficient depth and detail, preferably not exceeding **fifty pages**. Other detailed information should be included as appendices. Documentation should be bound in one or more volumes for convenience and should include a Table of Contents.

The documents should also include:

- The Institute Calendar;
- The Handbook, Calendar supplement, or other official publication relating to the Institute, and containing the public statement of programme's details; and
- Prospectus of the Institute.

These submissions shall also be made in electronic format (5 copies in CD's, DVD's or USB Drives).

The Board / Panel may at any stage request further information. If the submitted documents do not meet these guidelines, the applicants may be asked to resubmit new documents or reapply.

#### RA.3 FORMAT OF SELF EVALUATION REPORT TO BE SUBMITTED

##### RA.3.1 Organisation of the Institute

Outline the organisational structure of the Institute including:

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##### RA.3.1.1 Title and name of Chief Executive Officer of the Institute (e.g. Vice-Chancellor);

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##### RA.3.1.2 Name of the principal academic entity responsible for engineering education (e.g. Institute or Faculty of Engineering)

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### **RA.3.1.3 Title and name of the Head of the Institute (e.g. Dean of Engineering)**

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Provide evidence of the Institute's long-term commitment to engineering as a discipline, for example through corporate mission statements and strategic plans, or otherwise.

Provide evidence of the Institute's engagement in long-term planning processes (excerpts from the strategic plan would be welcomed).

Statement of whether the Institute has prime responsibility (subject to Institute approval processes) for programme design; programme content; programme delivery; management of resources; appointment and supervision of staff; and professional activities of staff (research, consulting, staff development).

### **RA.3.2 Organisation of the Institute responsible for the programme**

Describe the organisational structure of the Institute including titles and names of officers having responsibility across the Institute conducting the programme (e.g. Dean, Faculty Registrar etc); names of sub-entities (e.g. Department of Civil Engineering) and scope of their responsibilities; titles and names of the Heads of the sub-entities; and accountabilities in relation to educational programmes and to staff supervision

### **RA.3.3 General Information on the Programme to be Evaluated**

#### **RA.3.3.1 Title of Programme:**

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#### **RA.3.3.2 Name of Head of Department:**

**Contact name / e-mail for visit if different from Head of Department:**

#### **RA.3.3.3 Address of Department**

**Tel:**

**Fax:**

**e-mail:**

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#### **RA.3.3.4 Staff Member(s) Responsible for the Submission**

**Name of Main Contact(s) for the Programme(s):**

**Tel:**

**Fax:**

**e-mail:**

**(if different from A.3.1.4)**

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#### **RA.3.3.5 Date of Submission**

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#### **RA.3.3.6 Visit Date:**

(if not yet agreed, leave blank)

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#### **RA.3.3.7 Names of Current / Most Recent External Examiners (Include affiliation of external examiner/s)**

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#### **RA.3.3.8 Responses to Previous Evaluation Recommendations**

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(a.) Give the date of the last evaluation visit and your response to any conditions or recommendations attached to the last evaluation and how you have dealt with them.

**RA.3.3.9 Programme Development Since Last Evaluation**

(a.) Describe any major changes made to the Programme(s) since that date and give the date they were implemented. (Include changes such as conversion to modules and semesters)

Date:

Major Changes:

**RA.3.4 Programme Information**

(A separate submission of Section RA.3.4 is required for EACH programme for which evaluation is being sought but cross referencing of information should be used wherever possible)

**RA.3.4.1(a) Title of Programme as it appears on the Degree Certificate:**

**Discipline as it appears on the Transcript:**

**RA.3.4.1(b) Type of Programme and Duration**

**Please give the date the course was first offered in its present form.**

**(i) Date of first implementation of the Programme**

**(ii) Date on which Programme was first recognized**

**(iii) Is it a new Programme?**

**Yes / No**

**(iv) Type of Programme**

**Identify whether the course is full-time, part-time or sandwich, and if the latter, thick or thin.  
(complete all types for which evaluation is sought)**

<b>Full-time (F/T)</b>		(tick if appropriate)	
Minimum number of academic years		Normal contact hours per year	
<b>Part-time (P/T)</b>		(tick if appropriate)	
Minimum number of academic years		Maximum number of academic years	
Minimum contact hours per year			
<b>Sandwich (S)</b>		(tick if appropriate)	
Minimum number of years		Type of Sandwich (state Thick/Thin)	
State the year(s) in which industrial experience takes place			

**RA.3.4.1(c) Franchise Arrangements**

(i) If the programme is franchised, please give the name and address of the principal institution and the conducting institution, year(s) of the programme that is / are franchised, period of study in each institution

- (ii) Does the Degree Certificate specify where the study was undertaken?
- (iii) Does the transcript specify the institution/s where the different sections of the programme were undertaken?

**RA.3.4.2 Mission, Objectives and Outcomes of the engineering degree programme**

State the mission and the programme objectives and relate how the programme objectives and programme outcome are consistent with IESL criteria on graduate attributes listed under section R5.0 of this Manual.

**RA.3.4.3 Programme Structure**

Provide a diagram for the programme structure for each mode of delivery, clearly showing core and optional subjects, and all possible routes through the overall programme

**RA.3.4.4 Foundation Year / Access Year / Year 0:**

Is there a Foundation or Access Year or a Year 0? (if yes, state which)

If so, is this programme Full-time or Part-time?

- (a.) Is the Foundation year franchised? - If so, give details of the franchise arrangements
- (b.) Please provide a brief outline of programme indicating how the curriculum matches the GCE (Adv. Level) standard, particularly in mathematics and physical sciences
- (c.) Provide a brief description of the scheme of assessment for any Foundation Programme including student's entry requirements, external examiner involvement, quality assurance procedures and referral procedure
- (d.) Give details of the standard required for admission from the foundation year to the first year of the degree programme(s). Please give the total number of students who complete the foundation year, the number who satisfy the degree entry standard and the number admitted to each degree programme for which evaluation is sought, for the last three intakes
- (e.) Provide a diagram to show the progress of the previous three cohorts from the Foundation Year at the end of Year 1 of the degree (assessed against students with GCE 'A' level qualifications)

**RA.3.5 Programme Content**

A separate submission of Section RA.3.5 is required for EACH programme and for EACH year for which evaluation is being sought; however, please cross-reference information wherever possible)

**RA 3.5.1 Content of Program**

The Study Program shall prepare Table NT1 in the format given below.

**Table NT1: CONTENT OF THE ACADEMIC PROGRAM**

Category	Codes of Compulsory Modules	Codes of Elective modules*	Academic Credits in module contributing to category**	Total Credit value
(a) Math, Basic Sciences & Computing				
▪ Mathematics		-		
▪ Basic Sciences		-		
▪ Computing		-		
(b) Engineering Sciences & Engineering Design				
▪ Eng. Design & Projects				



▪ Eng. Discipline Specialization				
(c) Complementary Studies				
▪ Management				
▪ Eng. Economics				
▪ Communications				
▪ Humanities, Social Sciences				
▪ Eng. Ethics				
				Total
	<b>Credit Requirement for graduation</b>			

\* Elective modules may be considered for (b) and (c) categories only. The credits allocation should be considered for the minimum requirement of electives, and typical course modules taken by students of a particular programme.

\*\*As an example, a module of 3 credits may contribute 1 credit to mathematics, 0.5 credits to science and 1.5 credits to Engineering Design & Projects.

**RA.3.5.2 Syllabi / Module Descriptors**

Copies of syllabi, Module Descriptors and the relevant book list for each year of the degree should be provided (five copies). The descriptors should show the pre-requisites and co-requisites. This must include the links between the programme outcomes and the module outcomes as shown by the module assessment by completing Tables NT2 and NT3 according to the samples shown below

**Table NT2: Mapping LO - PO for each Module:**

[LO = Learning Objective or Intended Learning Outcome of each module, as stated in the Curriculum and

PO = Programme outcomes as stated in the Curriculum]

[Use H, M, L as defined below]

**H – High**

**M – Medium**

**L – Low**

	PO1	PO2	PO3	PO4	PO5	PO6	PO6	PO7	PO8	PO9	PO10	PO11	PO12
LO1	H	H		M				L			M		L
LO2	H	M	L	M	L	H			L		M	M	L
LO3	M												
LO4	M		H		H		L		L		L		
Module	H	M	M	M	L	L	L	L	L		M	L	L



**Table NT3: Mapping for the full Program**

Module	PO1	PO2	PO3	PO4	PO5	PO6	PO6	PO7	PO8	PO9	PO10	PO11	PO12
M.1	H	H		M				L			M		L
M.2	H	M	L	M	H	H			L		M	M	L
M.3	M												
M.4	M		H		H		L		L		L		
M.5	L												
M.6	M												
M.7	M												
M.8	H												
M.9	H												
	...												
	...												
	...												
	...												
M.40	M												
<b>Program</b>	<b>H</b>	<b>M</b>	<b>M</b>	<b>L</b>	<b>H</b>	<b>H</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>M</b>	<b>L</b>

**RA.3.5.3(a) Major Individual Project**

Outline the arrangements for project allocation, supervision, marking and moderation. A list of final year project titles and marks, together with mean and standard deviation, should be given for the most recent year available.

What are the implications for a student who fails the project?

---

**RA.3.5.3(b) Comprehensive Design - Group Projects**

Provide details of the Comprehensive Design Projects. State the average number of students in each group and show the marking arrangements for individual assessments. Also, outline the arrangements for project allocation, supervision and moderation. A list of Comprehensive Design Project titles and marks, together with mean and standard deviation, should be given for the most recent year available.

What are the implications for a student who fails a comprehensive design project?

---

**RA.3.5.4 Progression of Engineering Design Experience**

State how the concepts of engineering design are introduced into the programme and outline the progression of learning sequence of design exercises and individual / group projects, including any design-make-test work and how the design is assessed.

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**RA.3.5.5 Non-technical Subjects**

Describe the opportunities offered for the study of non-technical subjects, such as business and social aspects of engineering, including law, humanities, finance, management development, health and safety, environmental responsibilities, foreign languages and any other complementary subjects, and give details of the assessment methods

**RA.3.5.6 Communication Skills of Students**

Describe briefly how the following skills are developed and assessed:

- (a.) standard of English used in written work
- (b.) oral communication skills
- (c.) drawing and sketching abilities or other relevant forms of visual communications, including use of computer-aided design
- (d.) group working skills
- (e.) engineering problem-solving skills
- (f.) project management skills

**RA.3.5.7 Industrial Visits, industry speakers and / or Field Courses**

Give brief details of industrial visits and / or field courses (particularly, residential field courses) or any other provision by the Institute for students to obtain relevant experience off the campus. How do these experiences contribute to the degree result? Give the names of staff members responsible.

Provide details of all presentations by industry specialists in the programme, and where in the programme structure these experiences are provided, for the last twelve months.

**RA.3.5.8 Industrial Training, Placements / Experience, Sandwich Year**

**(a.) Industrial Training**

Give brief details of industrial training and placements, how these are monitored and the names of staff members responsible. Does the industrial training or the sandwich year contribute to the degree result? How is this industrial training and placement assessed?

**(b.) Full-time/Part time Programme**

- (i) Is there a compulsory element in the full-time/ Part-time programme for students to undertake an industrial placement or gain industrial experience?
- (ii) If not, how many students have not had any experience on graduation? Give the figures for the last three graduating years

<b>Industrial Experience - Full-time Programme</b>	<b>20__</b>	<b>20__</b>	<b>20__</b>
Number of students on full-time programme who have not had any industrial experience			
<b>Total number of students graduating from full-time programme(s)</b>			

**RA.3.5.9 Industrial Consultative Committee (ICC)**

Please state membership, when it was established and how frequently the committee meets

- (a.) Provide the agenda and minutes of the previous five meetings
- (b.) Show how Industrialists contribute to programme design and content development
- (c.) Outline the industrial input to the delivery of the programme(s)

Give details of Guest Lectures by visiting speakers from industry, and state whether attendance is compulsory

**RA.3.5.10 Period of Study Overseas**

Give brief details of any period of time spent overseas, indicating the length of time spent abroad and in which institution. Outline the arrangements to ensure that the study is compatible with that in the home Institute, and show how it is assessed. Does this period contribute to the degree result?

**RA.3.5.11 Tutorials**

Give brief details of tutorial arrangements including purposes of the tutorial system (e.g. subject, overall academic review, practical, etc. State the size of tutorial groups, student-staff contact hours etc.

**RA.3.5.12 Inter-departmental Teaching, External Teaching / Lectures**

- (a.) State which subjects are taught by the staff from other departments or other institutions, and give brief details of any franchise arrangements. Give brief details of the arrangements for assessment
- (b.) Give details of any lectures delivered off campus

**RA.3.6 Entry Standards**

**RA.3.6.1 Published Requirements**

Give the published entry qualifications requirement

**RA.3.6.2 Student Entry Qualifications**

- (a.) Please give, for each of the last three years, the actual qualifications and subjects of each student admitted to each programme. Give details of the qualifications offered by overseas students. Show separately the number of students with GCE 'A' Levels. (This information may be given as an annexure)
- (b.) Please provide, for each of the last three years, a histogram of the entry points score for 'A' Levels

**RA.3.6.3 Non 'A' Level Qualifications**

Comment on any problems encountered with the standard of students entering with non 'A' Level qualifications, and the steps taken to overcome them

**RA.3.6.4 Direct Entry to Second or Higher Years**

Give the qualifications required for direct entry to each year of the programme other than the first year. Provide information on the credit transfer policy applicable to these students.

**RA.3.6.5 Selection Procedures**

- (a.) Describe briefly the procedures adopted for admitting potential students. State whether all students are interviewed, and give the policy adopted for overseas applicants
- (b.) Please indicate the following for each of the past three years' entries

	20__	20__	20__
1.Total number of applicants			
2.Number of students interviewed			
3.Offers made			
4.Planned intake			
5.Actual intake			



**RA.3.7 Progression and Classification**

**RA.3.7.1 Progress through the programme**

Please complete a flow diagram showing the last three complete cohorts (groups of students working together through the same academic curriculum) through the system and a separate sheet for the last three intake years if these are different. Show clearly the progress of students through the programme for each option:

- (a.) direct entrants
- (b.) repeat students from previous years (referred students and failures)

**RA.3.7.2 Methods of Assessment**

(a.) Give details of the programme assessment / examination procedures / systems including the relevant weighting for examinations, projects, industrial training and other coursework and the weighting for each year's results

(b.) Give details of pass marks, grades and any provision for compensation, together with referral procedures and opportunities to re-sit examinations. What are the arrangements for resubmitting coursework and project work? What are the arrangements for making up deficiencies in training?

(c.) What are the conditions governing progression from one semester/year to the next through the programme?

(d.) State the criteria for the award of Classes; e.g. predetermined percentages of candidates, predetermined boundaries as percentage marks

**RA.3.8 Student Involvement in Professional and Other Bodies**

**RA.3.8.1 Professional Bodies**

- (a.) Explain how students are introduced to their relevant Professional Institutions
- (b.) What proportion of the cohorts are members of Professional Institutions or Societies?

20__			20__			20__		
Inst./Soc.	Number	Percent	Inst./Soc.	Number	Percent	Inst./Soc.	Number	Percent

**RA.3.8.2 Institute, Faculty and Department Societies/ Committees**

Please provide details of activities and number of students involved

**RA.3.9 Destination of Graduates**

Please indicate the employment category of the graduates for each of the last three years

20\_\_                      20\_\_                      20\_\_

1. Employment in the engineering discipline or occupations relevant to the degree programme
2. Commercial, financial, non-engineering employment



3. Engineering education / research / further study
4. Unemployed / temporary work
5. Returned to own country
6. Not known

Total number in the cohort

### **RA.3.10 Staff**

#### **A.3.10.1 Staff Profile**

Provide a listing of all academic staff who teaches in the Institute of Engineering, indicating their qualifications (degrees, professional memberships, honours and other post nominal). Include adjunct staff, and visiting or part-time staff who have principal responsibility for subjects. For the adjunct and visiting staff, give the titles of their substantive appointments.

Indicate numbers of visiting staff who perform supporting roles (i.e., do not have principal responsibility for subjects) and typical occupational categories e.g., practising engineers, other professionals, research students.

Discuss the competency of the teaching staff to cover all areas of the curriculum, and indicate any strategies for reinforcing areas of weakness, staffing new areas of specialisation, and succession planning for academic and organisational leadership.

Provide information about other units of the Institute, which teach subjects in the engineering programme(s), and about any staff outside the Institute who have responsibility for substantial elements of the engineering programme(s).

For any programme or pathway conducted substantially outside the Institute (e.g., contracted to another Institute, or remote campus with different staff), describe the staffing arrangements that apply, and the methods used by the Institute to assure itself of the capabilities of the staff involved.

---

#### **RA.3.10.2 Staff Policy**

Outline the Institute policies in relation to staff, including:

- appointment;
- promotion;
- supervision and staff counselling;
- appointment, supervision and counselling of visiting staff;
- professional development of staff; and
- any merit-based reward systems

Describe the Institute's arrangements for managing staff workloads indicating the approximate proportions of academic staff activity devoted to undergraduate teaching, postgraduate teaching, student consultation and counselling, research and research supervision, consulting and other professional activity, developmental programmes and administration.

Provide information about the number of staff undertaking professional development programmes, and the range of programmes undertaken.

---

**RA.3.10.3 Teaching and Research Staff**

Please provide the details shown below for each member of the academic staff and visiting industrial lecturer involved in the programme.

Ensure that details of all industrial experience are provided.

This information may be presented in any format suitable to the Department provided that it is brief and addresses all the requirements.

Under 'Research' the columns refer to:

- (a.) the number of research students currently supervised
- (b.) the number of refereed research papers published in the last five years
- (c.) the number of non refereed research papers published in the last five years

Name	Present post & date of joining establishment	Academic Qualifications	Membership of Professional Bodies or Societies	Professional Duties (eg External Examiner)	Brief résumé (with approx. dates of industrial experience incl. any current activities)	Present teaching subject(s) and student contact hours per year	Research		
							a	b	c



**RA.3.10.4 Summary of Professional Qualifications of Teaching and Research Staff**

The total number only for each Institution or Society is required

Institution / Society	Chartered Engineers	Graduate Engineers (minimum 4 year degree)	Other membership

**RA.3.10.5 Staff Development Policy including Continuing Professional Development (CPD) Requirements**

Brief details of Policy

- (a.) Please specify funding details for staff training / development
- (b.) Give examples of staff attendance at conferences and seminars (in the past two years)
- (c.) What is the take-up of staff development opportunities?
- (d.) Are all staff eligible, or, is staff training / development confined mainly to new members?

**RA.3.10.6 Student / Staff Ratio**

- (a.) Give the departmental equivalent full time staff / student ratio based on full-time equivalent staff involved in delivering the programme and students. Department full time staff, staff teaching support subjects from other departments and industry/sessional/part time staff must be clearly distinguished.

<b>EQUIVALENT FULL TIME ACADEMIC STAFF TO STUDENT RATIO</b>	
A) Total number of full time active staff for undergraduate teaching into this programme (Note: this does not include staff on study or sabbatical leave or research only staff)	
B) Full time equivalent of academic staff from other programmes servicing this programme	
C) Full time equivalent of part time academic staff servicing this programme	
D) Total Full time equivalent academic staff = A + B + C	
E) Total Full time equivalent students	
F) Full time equivalent staff to Student ratio = D:E	

**RA.3.10.7 Support / Technical Staff**

- (a.) Please give the technical staff / full time academic staff ratio for the Department.
- (b.) Explain clearly how this figure is derived



(c.) Give details of all relevant technical staff, differentiating between permanent [P] and short-term research support staff (R). In a large department, a summary by grade will suffice

Name	Qualifications

**RA.3.11 Research, Consultancy and Postgraduate Programmes**

**RA.3.11.1 Research**

Give details of the research and development projects carried out within the Department during the last three years. The details should include

- (i) the title and focus of the project
- (ii) the value and period of the project
- (iii) the way research influences teaching and student work

**RA.3.11.2 Consultancy**

Give details of the consultancy work carried out within the Department during the last three years. Details should include

- (i) examples of clients
- (ii) the total value
- (iii) the way consultancy work influences teaching and student work

(The information in A.3.10.1 and A.3.10.2 may be presented in any format suitable to the Department, provided it is brief. However, item (iii) should be included on this submission form. For a large Department a summary is acceptable.)

**RA.3.11.3 Postgraduate Programmes and Short Courses**

Give details of related postgraduate programmes and in-career courses offered by the Department, including the number and duration of courses and the total number of students on each course, for the past three years.

**RA.3.12 Resources**

**RA.3.12.1 Facilities**

Give briefly, details of the resources, which are available to students, in each of the areas designated, and any changes since the last visit. Indicate how many students can be accommodated in laboratories / workshops, design / drawing facilities, library and computer facilities at any one time. What facilities are available for students for their final year projects and comprehensive design projects?

Resources – Provide brief details	Access (availability other than for timetabled work i.e. evenings, weekends)
Laboratories / Workshops	
Details of annual expenditure on equipment or major expenditure on laboratories / workshops Explain how the laboratory equipment is being sustained/upgraded.	
Drawing / Design Facilities including special software applications	
Provide details of annual expenditure on equipment or major expenditure on drawing / design facilities	
<b>Library</b>	





Please give details of annual expenditure on

- (a.) journals
- (b.) books
- (c.) other

Give details of the online journals that students and staff can access

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**Computing Facilities**

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State

- (a.) number of computers within the Department (for students and staff separately)
- (b.) number of computers within the Institute to which students have access
- (c.) How often is equipment replaced?
- (d.) Specialist software available to students and staff

<p><b>Resources – Provide brief details</b></p> <p>Include details of what facilities are available in these rooms, i.e. computers, overhead projects, data projectors etc</p>	<p><b>Access</b> (availability other than for time tabled work i.e. evenings, weekends)</p>
<p><b>Study Rooms</b></p>	
<p><b>Lecture Rooms</b></p>	

**RA.3.12.2 Income to Support the Teaching Programme**

Please give figures for the last five years

	20__	20__	20__	20__	20__
<b>Income</b>					
Government					
Research / Consultancy					
Student Fees					
Other – Please specify					
<b>Total</b>					

**RA.3.12.3 Resource Changes**

Please state anything distinctive or unusual about the resources for the programme - e.g. new or refurbished accommodation or major equipment, shortage of space or difficulties over sharing space.

**RA.3.13 Quality Assurance and Systems**

- (i). Give a brief statement on teaching quality assurance procedures within the Department and state how they relate to the institutional QA requirements. Include information on
  - (a.) maintenance and improvement of standards of lectures and other modes of teaching and learning, assessment and examinations;
  - (b.) programme review procedure;
  - (c.) moderation of examinations, students’ work, including monitoring and feedback;
  - (d.) assessment of industrial training
  - (e.) the role of the External Examiner
- (ii). Provide records of the examination, curriculum development or other meetings as evidence on how QA procedures have been developed and the action taken by the Department to implement QA procedures.
- (iii) Provide in digital form the QA policies for the above procedures.

**RA.3.14 Future Plans**

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#### **RA.3.14.1 Planned Changes**

Give details of any major changes planned or intended in the programme structure or content, facilities, equipment, staff or student intake. What are the implementation dates?

(Changes to the curriculum that are agreed department policy and to be implemented within the period for which recognition is being sought should appear in Section 3).

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#### **RA.4 INFORMATION TO BE MADE AVAILABLE**

As a guide for the applicants, the following sections describe the format of information to be made available to the Panel. Additional information may be provided in support of the application.

For the Evaluation Panel visit the following information must be made available:

- Copies of all current promotional literature
- A list showing the name/s of the staff member/s currently responsible for delivery of each academic module
- For a full range of example academic modules at each year level and for each module, a dossier of materials including the module outline document distributed to students, examples of teaching materials and resources, examples of formative and summative assessment materials including examination papers, and specifications for assignments, projects and laboratory activity, examples of a range of graded student work including submissions and examination scripts, journals and portfolios, professional practice log books. Examples of low, medium and high achievement should be available, demonstrating a distinction in grading across the various performance thresholds. A full list showing the range of grades awarded for this module last time it was run.
- Of particular interest are graded student design and project reports/thesis submissions at various year levels. Displayed materials should be organised clearly against year levels and the records for each academic module separately identified. The range of displayed materials should be selected in order to demonstrate the delivery of the full range of generic capabilities in graduates including a clear indication of the standard of technical competence.
- Prime documentation associated with teaching and learning planning, review, management and quality improvement should be made available. Any appropriate records of formal proceedings, reports and submissions, trend and data analysis, quality system records or evidence of action implemented should be presented for perusal. This should include records of meetings of programme teaching teams, staff-student consultative forums, industry consultative committees body meetings, key documents associated with formal programme reviews as well as appropriate meeting records and documented action follow ups at all organisational levels.
- Details of any stakeholder surveys including teaching quality and module/programme evaluations, student destination surveys, employer or graduate surveys. As well as access to the survey instruments, any outcome summaries, subsequent reporting, follow up action and information describing influences this data has had on the continuous improvement processes should be presented.
- Available department and/or research annual reports.
- Access to the department's records management system.
- Access to the institution's and/or engineering department's human resource policy documents, including:
  - appointment and tenure (an example of selection criteria would be welcome);
  - promotion (an example of promotion criteria would be welcome);
  - professional development – as an engineering academic and professional educator;
  - supervision and staff counselling;
  - appointment, training, supervision and counselling of sessional staff; -any merit-based reward systems.



APPENDIX RB

**TYPICAL ACADEMIC PROGRAMME CONTENT**

**ACADEMIC PROGRAMME CONTENT**

Note: These subject combinations are typical examples provided for information only. The specific programmes may select their own curriculum to deliver the programme outcomes.

**(a) Engineering Science and Principles**

**RB 1:** Recognized programmes will be expected to cover, at an appropriate level, the broad areas of:

<b>CIVIL</b>	<b>MECHANICAL</b>	<b>ELECTRICAL</b>	<b>CHEMICAL</b>	<b>ELECTRONIC</b>	<b>COMPUTER</b>	<b>TEXTILE &amp; CLOTHING</b>	<b>EARTH RESOURCES</b>	<b>MATERIALS</b>
Strength and properties of materials	Manufacturing systems and industrial engineering	Circuits and systems	Chemical thermodynamics and kinetics, Process stoichiometry	Signals and systems	Computer systems	Properties of textile materials	Exploration, mining and testing of earthen materials	Engineering materials, Mechanics of materials
Applied mechanics: Statics and dynamics	Mechanics of machines and control systems	Electrical machines and drives	Transport phenomena, Heat, mass and momentum transfer	Electronics (analog, digital and physical)	Software engineering	Yarn and fabric manufacture	Applied mechanics	Applied mechanics: Dynamics
Structural analysis and design	Mechanics of solids	Electrical power systems	Separation process and particle technology	Communication systems	Operating systems	Textile engineering	Structural analysis of minerals	Mechanical behaviour of materials
Fluid mechanics and hydraulic engineering	Fluid mechanics	Electronics principles and power electronics	Chemical reactor engineering	Wave propagation	Computer architecture	Chemical processing of textiles	Remote sensing and GIS	Fluid mechanics and thermodynamics
Soil mechanics and geotechnical engineering	Thermodynamics	Computer systems, fields and waves	Process analysis and control, Safety analysis and control	Computer systems	Computer networks	Computer systems, fields and waves	Geology	Electrical & magnetic properties of materials
Construction planning, technology and management	Machine elements and design	Control systems	Material science and technology	Control systems	Theory of electricity, Principles of electronics	Textile testing and quality control	Gemmology	Failure analysis and selection of materials

**RB 2:** Alongside these basic subjects, there must be a study of the principles and applications of:

<b>CIVIL</b>	<b>MECHANICAL</b>	<b>ELECTRICAL</b>	<b>CHEMICAL</b>	<b>ELECTRONIC</b>	<b>COMPUTER</b>	<b>TEXTILE &amp; CLOTHING</b>	<b>EARTH RESOURCES</b>	<b>MATERIALS</b>
Geology	Energy and the environment	Power system analysis	Material and energy balance flow sheeting	Electronic system analysis and design	Object oriented programming	Control systems and automation	Hydrology	Materials and ceramic sciences
Environmental engineering	Electrical power and machines	Electrical drives and applications	Polymer science and engineering	Computer architecture	Databases	Yarn and fabric Mechanics	Mining Methods	Characterisation of materials
Highway and transportation engineering	Measurement and Instrumentation	Measurement and instrumentation	Plant and equipment design, Piping and instrumentation	Electronic measurement	Data communication	Financial management, Human Resource management	Mine Ventilation	Process and Polymer Engineering
Water resources	Electronics and microprocessors	Electrical protection systems	Energy systems – conservation and management	Electronic control and instrumentation	Microprocessor based systems	Non-wovens and technical Textiles	Rock blasting	Ferrous/non-ferrous metals and alloys
Surveying	Automobile engineering	High voltage Engineering	Biotechnology, Biochemical and food process engineering	Internet technology and applications	MIS and professional practice	Environmental Management	Surveying, Environmental aspects	Design and fabrication of polymer products
Project management	Computer aided design	Electrical energy utilisation	Viability, legal framework and reliability		Data structures and algorithms	Operations management and MOT	Mine management	Degradation of materials

These are supporting studies without which an engineer will lack some of the understanding, which is necessary to be able to practice effectively across a broad spectrum of industries and functions.



**(b) Mathematics, Statistics and Computing**

**RB 3:** These subjects should be studied to a level necessary to underpin the engineering subjects of the programme and with a bias towards application in the teaching. The use of numerical methods of solution is encouraged, with an appreciation of the power and limitations of the computer for modelling engineering situations. Wherever practicable, it is preferred that mathematics, statistics and computing be taught in the context of their application to engineering problems, and it follows that some mathematical techniques may be learnt within other subjects in the programme. In addition to the use of computers as tools for calculation, analysis and data processing, courses should introduce their application in such areas as:

CIVIL	MECHANICAL	ELECTRICAL	CHEMICAL	ELECTRONIC	COMPUTER	TEXTILE & CLOTHING	EARTH RESOURCES	MATERIALS
Computer aided analysis and Design	Computer aided design and manufacture	Mathematical applications	Computer aided analysis and design	Mathematical applications	Mathematical applications	Computer aided design	Computer aided analysis and design	Computer aided analysis and design
Economic analysis for decision making	Numerical methods	Statistical techniques	Economic analysis for decision making	Statistical techniques	Statistical techniques	Statistical techniques	Economic analysis for decision making	Economic analysis for decision making
Data base management	Programming techniques	Computer aided design	Databases and information systems	Computer aided design	Numerical computations	Information systems	Database Systems	Database Systems
Management information systems	Operational Research	Electrical properties of materials	Operational research	Software engineering	Automation	On-line control of production systems	Mine development	Operational research
Business and management systems	Industrial economics and management	Management systems	Business and management systems	Management systems	Systems analysis and design	Management and marketing systems	Management systems	Management systems
Statistical techniques	Mechatronics	Numerical computation	Numerical methods	Numerical computation		Operational research	Numerical computations	Numerical computations



### **(c) Engineering Applications - Materials, Design, Manufacture, Construction**

**RB 4:** Emphasis on engineering applications in a degree programme aims to ensure that all engineering graduates have a sound understanding of up-to-date industrial practice, and in particular:

#### **Civil Engineering**

- To appreciate the characteristic and structural behaviour of materials in a variety of user environments;
- To be able to analyse and design structural components from these materials;
- To appreciate the range of construction methods currently available and the skills which they require in people;
- To appreciate the cost aspects of material selection, construction methods, operation and maintenance in their interaction with design and product marketing;
- To understand the whole process of industrial decision-making in design, construction and use, and how it can be influenced not only by technical ideas but also by the practical constraints of financial and human resources and by the business and social environment of engineering.

#### **Mechanical engineering**

- To appreciate the characteristic behaviour of materials in a variety of user environments;
- To appreciate the range of manufacturing methods currently available and the skills which they require in people;
- To appreciate the cost aspects of material selection, manufacturing methods, operation and maintenance in their interaction with design and product marketing to understand the whole process of industrial decision-making in design, manufacture and use, and how it can be influenced not only by technical ideas but also by the practical constraints of financial and human resources and by the business and social environment of engineering.

#### **Chemical engineering**

- To appreciate the characteristic and structural behaviour of materials in a variety of user environments;
- To be able to adopt these materials in process design and analysis;
- To understand the general sequence of processing steps for any given type of chemical process;
- To calculate and analyse the material and energy flows for a given chemical process;
- To understand the selection or estimation of process operating conditions, selection of process equipment, maintenance and process troubleshooting;
- To analyse the various types of unit operations and processing steps, and to decide on their relative advantages and disadvantages on the basis of environment, economics, safety and operability;
- To understand the various process control schemes for the purpose of maintaining production quality, ensuring process safety and preventing waste.

#### **Electrical and Electronic engineering**

- To appreciate the characteristic behaviour of materials in electrical and electronic systems;
- To be able to analyse and design electrical and electronic systems from devices / components made of various materials;
- To appreciate cost effectiveness of component / device / equipment / material selection, manufacturing process and integration process, operation and maintenance;
- To appreciate the range of manufacturing and processing methods currently available and the skills which they require in people;
- To understand the whole process of industrial decision-making in design, manufacture and use, and how it can be influenced not only by technical ideas but also by the practical constraints of financial and human resources and by the business and social environment of engineering.

#### **Computer Science and Engineering**

- To appreciate the characteristic behaviour of hardware, software and networking systems;
- To be able to analyse and design hardware, software and networking technologies, and to use them in the design of information systems to achieve required goals;
- To appreciate the range of methodologies available for the development of hardware, software and networking systems;
- To appreciate the importance of improving performance of hardware, software and networking systems;
- To understand the process of information technology, and how it can be influenced not only by technical ideas but also by the practical constraints of financial and human resources and by the business and social environment of engineering.



### **Textile and Clothing Process Engineering**

- To appreciate the characteristics and structural behaviour of textile materials;
- To be able to use textile materials in analysing, designing and fabricating textile structures;
- To appreciate the range of manufacturing and processing methods currently available, and the skills they require in people;
- To understand the general sequence of processes and material flow of any textile / clothing manufacturing system;
- To understand the various process control schemes for the purpose of maintaining quality of production and optimising production;
- To understand the whole process of industrial decision making in the analysis, design, manufacture and use, and the influence of constraints such as financial, human and environmental, on the decision making.

### **Earth Resources Engineering**

- To appreciate the characteristic behaviour of earth resources in a variety of user environments;
- To be able to understand the general sequence of steps in the processing of earth resources;
- To appreciate the range of mining, processing and testing methods currently available, and the skills that they require in people;
- To analyse and design ventilation systems for underground mines;
- To understand the environmental effects of mining and the mitigatory measures, surveying, remote sensing and GIS applications for decision making, and how it can be influenced not only by technical ideas but also by the practical constraints of financial and human resources and by the business and social environment of engineering.

### **Materials Engineering**

- To be able to understand the structure-properties relationship of engineering materials and the basics of materials science in order to predict performance at the design, manufacture and in-service stages in the core areas of polymers, ceramics, metals and composites;
- To be able to apply scientific and engineering principles to ensure that materials are selected, processed, fabricated and used to achieve their intended performance;
- To appreciate the materials process technology with cost effective materials selection, manufacturing methods, product design and marketing and industrial maintenance;
- To develop competence in laboratory work, ability to use information technology and a high level of skills in communication and presentation;
- To understand the industrial environment for decision making, and how it can be influenced not only by technical ideas but also by the practical constraints of financial and human resources and by the business and social environment of engineering.





**APPENDIX RC**

**EVALUATION REPORT FORMAT**



**EVALUATION REPORT**

**RC I. GENERAL INFORMATION**

**A. INSTITUTE**

1. Name of the Institute:  
.....
2. Title of Programme for Recognition:  
.....
3. Visit Date:  
.....

**B. EVALUATION PANEL MEMBERS**

1. Chairman: .....
2. Members: (a) .....  
(b) .....
3. IESL Official (if any):  
.....

**C. ACTION SINCE LAST EVALUATION**

1. Date of last evaluation: .....
  2. Action taken to address shortcomings identified at the last review: Acceptable / Not acceptable
- Comments:  
.....  
.....

**RC 2. EVALUATION BASED ON CRITERIA**

Please provide a brief description for each subheading relevant to each criterion and indicate the overall assessment on an ascending scale of 1 to 5 (Best – 5) under criteria 1 to 4

<b>CRITERION No 1. Academic Programme</b>	<p><b>Overall Assessment</b></p> <table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </table>	1	2	3	4	5
1		2	3	4	5	
<b>Program Objectives and Outcomes:</b>						
<b>Program Structure:</b>						
<b>Educational Process:</b>						
<b>Program Admin &amp; Statistics:</b>						
<b>Staff:</b>						



<b>CRITERION No 2. Staff and Students</b>	<b>Overall Assessment</b> <table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </table>	1	2	3	4	5
1		2	3	4	5	
Educational Culture						
Program Admin & Statistics						
Staff						

<b>CRITERION No 3. Facilities available in Institute/Department</b>	<b>Overall Assessment</b> <table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </table>	1	2	3	4	5
1		2	3	4	5	
Educational Culture						
Operational Environment						
Resources & Facilities						

<b>CRITERION No 4. Quality Systems</b>	<b>Overall Assessment</b> <table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </table>	1	2	3	4	5
1		2	3	4	5	
Assessment						
<b>Quality Systems</b>						
Operational Environment						
Programme sustainability inclusive of financial stability						



**RC 3. EVALUATION PANEL ASSESSMENT REPORT SUMMARY**

i) Commendations
ii) Strengths
iii) Weaknesses
iv) Concerns
v) Opportunities for improvement
vi) Any other comments

**RC 4. RECOMMENDATION BY EVALUATION PANEL**

**A - Full Recognition for 5 years**

Comments:

.....  
.....

**B - Conditional Recognition**

Duration

 years

Conditions to meet:

(i).....

(ii) .....

- Comments,

.....  
.....

**D Not Recognized**

Comments:

.....  
.....



**Prepared and submitted by Evaluation Panel:**

(i) Chairman.....Signature

(ii) Member.....Signature

(iii) Member.....Signature

Date .....

**RC 5. ACTION BY EDUCATION STANDING COMMITTEE OF IESL (ESC)**

**A. Date Submitted to ESC:**

.....

**B. Comments by the ESC:**

(i) .....

(ii) .....

(iii).....

(iv).....

**RC 6. ACTION BY INSTITUTION OF ENGINEERS, SRI LANKA**

**A.** Report presented to the IESL Council on

.....

**B.** Decision of IESL Council

.....

**C.** Action to be followed:

.....

(i) Finalize the 'Document to be forwarded to the Study Programme together with the Council Decision'.

This document should be the 'Conclusions' section of the Review Panel Report covering

(i) Commendations; and

(ii) Detailed Comments and Recommendations.

.....

Signature

Executive Secretary, IESL

Date: .....



**RC 7. ACTION BY THE SECRETARIAT**

Recognition Certificate No.....was issued to .....

.....

on :.....



**APPENDIX RD**

**EXTERNAL EXAMINER'S REPORT**



**APPENDIX RD**

**EXTERNAL EXAMINER'S REPORT**

The main objective for having an External Examiner is to benchmark each programme of study to internationally accepted levels. Therefore, the external examiner's report should contain, but not be limited to, the following:

- (i) Assessment of staff quality including qualifications and industrial exposure. Also to assess loading of each staff in teaching, research, consultancy and supervision of student projects.
- (ii) Assessment on staff / student ratio. If not sufficient, the corrective action to be taken by the Institute to correct as noted.
- (iii) Assessment on the process of preparation of question papers i.e., procedures for setting, vetting, Quality assurance, confidentiality and security.
- (iv) Assessment on the question papers and marking schemes set for the last two semesters of the course. The standard of questions, coverage of syllabus, adequate balance between theory and application, questions set are of equal level, adequate choice of questions, appropriateness of marking scheme.
- (v) Assessment on the marked answer scripts from a sample of good, average and weak candidates. Assessment of the fairness / disparity of marking, whether follow-through method is adopted where one section of the answer is incorrect; the response of the candidates to the questions, the distribution of marks.
- (vi) Assessment on coursework, laboratory work, assignments, design projects and final year projects.
- (vii) Assessment on examination regulations available