



BOARD OF ACCREDITATION FOR  
ENGINEERING AND TECHNICAL EDUCATION

## WRITING EFFECTIVE EVALUATION TEAM REPORTS FOR BAETE ACCREDITATION

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### Outline

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- Purpose of ET report
- Attributes of a good report
- Basis of recommendations
- Requirements to be a WA signatory
- BAETE Program Outcomes
- Alignment between PO-CO-Assessment
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- Case studies
- Forming the bigger picture
- Summary



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## Who are the good evaluators?

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- They are experts who understand and know BAETE manual, accreditation criteria and accreditation guidelines well
- They know Outcome Based Education well
- They differentiate between bean counting and holistic evaluation
- They write effective ET report



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## Purpose of the ET Report

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- To give recommendations to the Board for making accreditation decision
- To give feedback to the evaluated program for improvement
- To demonstrate to WA reviewers that
  - Evaluations are conducted consistently and fairly as per manual
  - Recommendations are justified in sufficient detail to support decision making
  - PO attainment of accredited programs at acceptable standards as defined by WA GA exemplars



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## Attributes of a good report

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- Report as per BAETE criteria and requirements
- Report evidence based and specific
- Justification for recommendations are adequate
- Does not include any subjective narration
- Does not contain any prescriptive recommendation
- Not filled with raw data without interpretation or with trivial observations
- No nitpicking or bean counting
- Isolated evidence not used to make general conclusions



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## Basis for recommendation

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Each criterion evaluated in terms of

- **Compliance** – satisfies requirement. No corrective measure needed
- **Concern** – Broadly in compliance but needs improvement to avoid potential non-compliance
- **Weakness** – Lacks strength of compliance. Requires corrective measures
- **Deficiency** – Does not exist or is in an elementary stage. Compliance is required



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## Basis for recommendation

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Policy for making accreditation decision

- No deficiency, no weakness in any criterion
  - Accreditation for 6 years
- No deficiency, weakness not in more than 3 criteria
  - Accreditation for 3 – 5 years
- Deficiency in 1 or more criteria or weakness in more than 3 criteria
  - No accreditation (NA)

An NA program may reapply after 1 year



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## Requirements to be a WA signatory

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The signatories of the Washington Accord recognize the **substantial equivalence** of programs in **satisfying the academic requirements** for the practice of engineering at the professional level (mobility of professional engineers achieved through IPEA)



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## Requirements to be a WA signatory

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**Substantial equivalence** of engineering degree programs accredited by WA signatories (WA definition):

While different programs might take a different approach in engineering education, the same overall educational outcomes are achieved.

Substantial equivalence of accreditation decision is realized when an accreditation decision made corresponds to the accreditation decision of a program from an Accord signatory with substantially equivalent outcomes.



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## Requirements to be a WA signatory

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To achieve recognition of educational programs among signatories

1. Ensure that the accredited programs attain the same standard (substantially equivalent outcomes)
2. This assessment is performed under substantially equivalent procedure by all other signatories;



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## BAETE Program Outcomes

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(a) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems. (C)

(b) **Problem analysis:** Identify, formulate, research the literature and analyze complex engineering problems and reach substantiated conclusions using first principles of mathematics, the natural sciences and the engineering sciences. (C)



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## BAETE Program Outcomes

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(c) **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety as well as cultural, societal and environmental concerns. (C)

(d) **Investigation:** Conduct investigations of complex problems, considering design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions. (C)



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## BAETE Program Outcomes

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- (e) **Modern tool usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. (C, P)
- (f) **The engineer and society:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice. (C, A)

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## BAETE Program Outcomes

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- (g) **Environment and sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development. (C, A)
- (h) **Ethics:** Apply ethical principles and commit to professional ethics, responsibilities and the norms of the engineering practice. (A)

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## BAETE Program Outcomes

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- (i) **Individual work and teamwork:** Function effectively as an individual and as a member or leader of diverse teams as well as in multidisciplinary settings. (A)
- (j) **Communication:** Communicate effectively about complex engineering activities with the engineering community and with society at large. Be able to comprehend and write effective reports, design documentation, make effective presentations and give and receive clear instructions. (P, A)



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## BAETE Program Outcomes

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- (k) **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work as a member or a leader of a team to manage projects in multidisciplinary environments. (C, A)
- (l) **Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent, life-long learning in the broadest context of technological change. (A)



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## Alignment between PO-CO-Assessment

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- PO achievement through CO achievement is possible only when PO, CO and assessment tools are constructively aligned!
- Misalignment easy to identify when the action verb or identification of taxonomy domain/level of CO is incorrect.
- Misalignment can exist even when action verb is correct and taxonomy domain/level are correct!

ET must be able to identify misalignment in all forms



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## Alignment between PO-CO-Assessment

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CO1: Apply the basic laws of electrical circuit analysis:

PO2, Knowledge/Apply ?

CO2: Analyze frequency response of single stage amplifiers:

PO2, Knowledge/Analyze ?

Assessment question 1: Analyze the following single stage common-emitter amplifier and calculate the lower cut-off frequency. (CO2) ?

Assessment question 2: Analyze the following single stage common-emitter amplifier and determine the effect of increasing the coupling capacitor on lower cut-off frequency.

(CO2) ?



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## Alignment between PO-CO-Assessment

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CO1: Analyze single & three phase AC systems:

PO3, Knowledge/Analyze ?

CO2: Design combinational circuits to achieve specified operations: PO3, Knowledge/Create ?

Assessment question 1: Design a 4 bit full adder using nand gates only. (CO2) ?

Assessment question 2: Design a 4 bit full adder using nand gates only. Use only 4 input nand gate ICs operating at 3.2 V. Total delay should be less than 50 ms and total power less than 100 mW. (CO2) ?



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## Alignment between PO-CO-Assessment

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CO1: Evaluate the maximum power that can be supplied from a 2 terminal circuit: PO4, Knowledge/Evaluate ?

CO2: Evaluate the Thevenin's equivalent circuit of a 2 terminal circuit: PO4, Knowledge/Evaluate ?

Assessment question 1: Evaluate the Thevenin's equivalent of the following 2 terminal circuit. (CO2) ?

Assessment question 2: Design and conduct an experiment to find the Thevenin's resistance of a 2 terminal circuit. Indicate which data are to be collected and how the data provides Thevenin's resistance. (CO2)



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?

## ET report – evaluator assessment form

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### 2. Criteria

#### Criterion 1: Organization and Governance

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Compliance with acts and statutes			
ii. Statutory positions and bodies of the institution			
iii. Existence of and adherence to policies	The institution should have published policies, including a mechanism for addressing grievances, regarding academic and the administrative matters involving students, faculty members and non-teaching employees. The policies should be put into practice.		
iv. Grievance redress system			
v. Alumni association			
vi. Convocation			
vii. Others (specify)			
<b>Overall criterion 1</b>			



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## ET report – evaluator assessment form

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#### Criterion 2: Financial and Physical resources

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Finance and budget	The campus infrastructure, such as the extent of the land and built-up area, extra- and co-curricular facilities, and support facilities, including maintenance support for infrastructure and facilities, should be adequate for the total number of students and employees of the institution.		
ii. Scholarship and financial aid for students			
iii. Accommodation for male and female students			
iv. Safety measures: infrastructure, practices, training and compliance			
v. Sports and recreational facilities			
vi. Placement center			
vii. Others (specify)			
<b>Overall criterion 2</b>			



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### Criterion 2: Financial and Physical resources

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Finance and budget			
ii. Scholarship and financial aid for students			
iii. Accommodation for male and female students			
iv. Safety measures: infrastructure, practices, training and compliance	The possibility of any risk from manmade or natural hazards should be properly assessed and addressed in the Safety Plan. All labs shall have their own plans to prevent and manage incidents and accidents. Fire detection and fire-fighting facilities should be adequate. An action plan is required to address safety issues when demanded by the situation. Adequate measures should be in place to make the campus safe for students, employees and visitors.		
v. Sports and recreational facilities			
vi. Placement center			
vii. Others (specify)			
<b>Overall criterion 2</b>			



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### Criterion 3: Faculty Members

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Number and quality of full-time faculty members	The department should have a sufficient number of full-time faculty members so that they are not overloaded with courses and so the program does not become overly dependent on part-time faculty members.... The faculty members should have adequate academic qualifications with specialization in areas closely related to the program(s) offered by the department. The proportion of senior faculty members and junior faculty members should be appropriate.		
ii. Number and quality of part-time faculty members			
iii. Class size			
iv. Student-teacher ratio			
v. Involvement of faculty members in research, development and professional activities			
vi. Role of faculty members in directing the course of and improvements in the program			
vii. Training of faculty members on outcome-based education			
<b>Overall criterion 3</b>			



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### Criterion 3: Faculty Members

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Number and quality of full-time faculty members			
ii. Number and quality of part-time faculty members			
iii. Class size	Adequate interactions between students and faculty members both within and outside the classes are essential. The teacher-student ratio, class size and teaching load should not compromise opportunities for interactions.		
iv. Student-teacher ratio			
v. Involvement of faculty members in research, development and professional activities			
vi. Role of faculty members in directing the course of and improvements in the program			
vii. Training of faculty members on outcome-based education			
Overall criterion 3			

## ET report – evaluator assessment form

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### Criterion 3: Faculty Members

Criterion 3: Faculty Members		Findings from SAR	Findings from onsite visit	Evaluation
Sub-criteria				
i. Number and quality of full-time faculty members				
ii. Number and quality of part-time faculty members				
iii. Class size				
iv. Student-teacher ratio				
v. Involvement of faculty members in research, development and professional activities				
vi. Role of faculty members in directing the course of and improvements in the program		Faculty members should have the responsibility and the authority to design and update the curriculum, establish the course and program outcomes, and select and use the assessment tools appropriate for evaluating the performance of the students in the classes and the achievement of the outcomes.		
vii. Training of faculty members on outcome-based education				
Overall criterion 3				

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<b>Criterion 4: Students</b>			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Existence of and adherence to a well-formulated admission policy, including admission criteria	There should be a published policy for the admission and transfer of students into the program. The admission or transfer requirements should be appropriate for the selection of students with the potential to achieve the program's outcomes. The policy should be implemented in practice.		
ii. Policy for transfer students			
iii. Continuous monitoring of student performance			
iv. Advising and counseling			
v. Extra- and co-curricular activities			
vi. Professional society activities			
vii. Others (specify)			
<b>Overall criterion 4</b>			



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<b>Criterion 4: Students</b>			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Existence of and adherence to a well-formulated admission policy, including admission criteria			
ii. Policy for transfer students			
iii. Continuous monitoring of student performance	The academic performance of the students should be continuously monitored in terms of the achievement of the outcomes and feedback provided to the students. There should be provisions for remedial or corrective measures when necessary.		
iv. Advising and counseling			
v. Extra- and co-curricular activities			
vi. Professional society activities			
vii. Others (specify)			
<b>Overall criterion 4</b>			



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<b>Criterion 4: Students</b>			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Existence of and adherence to a well-formulated admission policy, including admission criteria			
ii. Policy for transfer students			
iii. Continuous monitoring of student performance			
iv. Advising and counseling	Every student should be assigned an advisor. The advisor should counsel, guide and mentor the student on all academic and professional matters.		
v. Extra- and co-curricular activities			
vi. Professional society activities			
vii. Others (specify)			
<b>Overall criterion 4</b>			



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<b>Criterion 5: Academic Facilities and Learning Environment</b>			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Library	The institution should have a well-stocked library. The books, journals and other resources available in the library should be adequate for the program and the faculty members.		
ii. Classrooms			
iii. Laboratories and equipment			
iv. Full-time technical support staff for laboratories			
iv. Internet and computing facilities			
v. Others (specify)			
<b>Overall criterion 5</b>			



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Criterion 5: Academic Facilities and Learning Environment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Library			
ii. Classrooms	The number of classrooms available should be adequate to properly run the program. The classroom facilities and the environment should be conducive to learning.		
iii. Laboratories and equipment			
iv. Full-time technical support staff for laboratories			
iv. Internet and computing facilities			
v. Others (specify)			
Overall criterion 5			



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Criterion 5: Academic Facilities and Learning Environment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Library			
ii. Classrooms			
iii. Laboratories and equipment	The number of laboratories and equipment should be adequate for conducting different labs in the program. Every student should have the opportunity for hands-on activity in the laboratories.		
iv. Full-time technical support staff for laboratories			
iv. Internet and computing facilities			
v. Others (specify)			
Overall criterion 5			



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Criterion 6: Curriculum and Teaching-Learning Process			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Curriculum	The breadth and depth of the curriculum and the teaching-learning activities should be appropriate for the solution of complex engineering problems in the relevant discipline.		
ii. Laboratory activities			
iii. Final year design project			
iv. Teaching-learning activities			
v. Academic calendar			
vi. Others (specify)			
Overall criterion 6			



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Criterion 6: Curriculum and Teaching-Learning Process			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Curriculum			
ii. Laboratory activities			
iii. Final year design project	There should be a final year design project or capstone project extending over a period of one year that represents a culminating demonstration of the program outcomes at the level of solving complex engineering problems.		
iv. Teaching-learning activities			
v. Academic calendar			
vi. Others (specify)			
Overall criterion 6			



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### Criterion 6: Curriculum and Teaching-Learning Process

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Curriculum			
ii. Laboratory activities			
iii. Final year design project			
iv. Teaching-learning activities	The teaching-learning processes and activities selected for each course should be effective and appropriate for achieving the outcomes. Student participation and learning should be enhanced. Hands-on activities in the lab should be an integral part of teaching and learning. The program should include adequate activities in the lab.		
v. Academic calendar			
vi. Others (specify)			
<b>Overall criterion 6</b>			



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### Criterion 7: Program Educational Objectives (PEO)

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Mission and vision			
ii. Program Educational Objectives (PEOs)	Each engineering program should have published PEOs that should be clear, concise, assessable and realistic within the context of the available resources. The PEOs should be consistent with the vision and mission of the program-offering department.		
iii. Relationship between the POs and PEOs			
iv. Process of PEO measurement			
v. Others (specify)			
<b>Overall criterion 7</b>			



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### Criterion 7: Program Educational Objectives (PEO)

Criterion 7: Program Educational Objectives (PEO)			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Mission and vision			
ii. Program Educational Objectives (PEOs)			
iii. Relationship between the POs and PEOs	They should be supported by a curriculum and teaching-learning processes that lead to the attainment of these objectives. Justifications should be provided for how the curriculum and the outcomes contribute to the attainment of the PEOs.		
iv. Process of PEO measurement			
v. Others (specify)			
Overall criterion 7			



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### Criterion 7: Program Educational Objectives (PEO)

Criterion 7: Program Educational Objectives (PEO)			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Mission and vision			
ii. Program Educational Objectives (PEOs)			
iii. Relationship between the POs and PEOs			
iv. Process of PEO measurement	A process should be developed to assess the level of attainment of each of the PEOs to evaluate the effectiveness of the academic program. Adequate evidence and documentation should be provided to support the achievement of a PEO with the help of the assessment and evaluation process that has been developed.		
v. Others (specify)			
<b>Overall criterion 7</b>			



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Criterion 8: Program Outcomes and Assessment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Course outcomes (COs)			
ii. Relationship between COs and POs			
iii. Achievement of POs as required by the BAETE	<i>The program must demonstrate that by the time of graduation, students have attained a certain set of knowledge, skills and behavioral traits to some acceptable minimum level. The BAETE specifically requires that students acquire the following graduate attributes.</i> POs (a) – (d) requires solution of complex engineering problems		
iv. Achievement of additional POs			
v. Others (specify)			
Overall criterion 8			



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Criterion 8: Program Outcomes and Assessment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Course outcomes (COs)			
ii. Relationship between COs and POs	<i>the correlation between the Course Outcomes (COs) and POs should be demonstrated through the mapping of COs onto POs. The way that assessment tools and laboratory and project coursework contribute to the attainment of the POs should be demonstrated through rubrics or mapping exercises.</i>		
iii. Achievement of POs as required by the BAETE			
iv. Achievement of additional POs			
v. Others (specify)			
Overall criterion 8			



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### Criterion 9: Continuous Quality Improvement (CQI)

Criterion 9: Continuous Quality Improvement (CQI)				
Sub-criteria		Findings from SAR	Findings from onsite visit	Evaluation
i.	Feedback from students	It should demonstrate an established system for periodically compiling the level of attainment in terms of PEO.... POs should be assessed on a regular cycle..... The program should evaluate the curriculum and teaching quality..... The program should demonstrate that the results of this periodic evaluation are used for continuous improvement.		
ii.	Feedback from course instructors			
iii.	Feedback from external stakeholders			
iv.	CQI loops			
v.	Addressing deficiencies, weaknesses and concerns identified during the previous accreditation evaluation (if applicable)			
vi.	Others (specify)			
Overall criterion 9				



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### Criterion 10: Interactions with the Industry

Criterion 10: Interactions with the Industry				
Sub-criteria		Findings from SAR	Findings from onsite visit	Evaluation
i.	Industrial Advisory Panel	There must be industry participation in the development of the curriculum.... An engineering program should have an Industry Advisory Panel (IAP) and an Alumni Association (AA) for this purpose.		
ii.	Participation of the industry in academic updates			
iii.	Students' opportunities to gain industrial experience			
iv.	Others (specify)			
Overall criterion 10				



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### Criterion 10: Interactions with the Industry

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Industrial Advisory Panel			
ii. Participation of the industry in academic updates			
iii. Students' opportunities to gain industrial experience	The program should provide students with the opportunity to obtain industrial experience through internships, industry visits or design projects conducted by practicing engineers and faculty members with industrial experience.		
iv. Others (specify)			
<b>Overall criterion 10</b>			



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	Findings from SAR	Findings from onsite visit	Evaluation
<b>Program-Specific Criteria (Chapter 6 of the manual)</b>	The curriculum should satisfy the requirements of the relevant program-specific criteria as described in Section 6.		



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## Case Studies

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Criterion 1: Organization and Governance			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Compliance with acts and statutes	<ul style="list-style-type: none"> <li>Established as an</li> </ul> <div style="border: 1px solid black; width: 100px; height: 100px; margin: 5px 0;"></div> <ul style="list-style-type: none"> <li>Approved by Government of Bangladesh (2003) (Vol.2)</li> <li>Approval of Syndicate (2008)</li> <li>Copy of statutes (as BD Gadget, 2003) (Vol. 2)</li> <li>Executive Committee (Dean, Heads, Prof. and Associate Prof., 3 from other, 2 from outside)</li> <li>Academic Committee (Head, All faculties, 1 from outside (academic), 1 from industry) (for three years)</li> <li>Planning and Development Committee</li> <li>Selection Committee for Professor/Associate Professor</li> </ul>	<ul style="list-style-type: none"> <li>Verified during on-site visit.</li> <li>Appointment for the post of Pro-Vice Chancellor is under process.</li> </ul>	Compliance

Is so much raw data needed to be shown to justify evaluation?



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## Case Studies

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Criterion 5: Academic Facilities and Learning Environment			
Sub-criteria	Preliminary findings	Final findings	Evaluation
i. Library	Information provided on pp.45-48.	<ul style="list-style-type: none"> <li>From visit well resourced library is observed.</li> <li>Small number of books on structural, geotechnical and transportation engg.</li> </ul>	Compliance  Opportunity for improvement
ii. Classrooms	Number and seating capacity provided on p.49.	Visited several classrooms including two with on-going classes. Found satisfactory.	Compliance

Are the descriptions under "Preliminary Findings" helpful to the ET during the onsite visit?

Are the descriptions under "Final Findings" adequate to justify the evaluation or is more data/details necessary?



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## Case Studies

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Criterion 2: Financial and Physical resources			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Finance and budget	<ul style="list-style-type: none"> <li>Year 2015 – Tk 303605000 (Ex. 302307000)</li> <li>Year 2016 – Tk 426127000 (Ex. 419697000)</li> <li>Year 2017 – Tk 529706000 (517463000)</li> <li>Less budget for labs (In 2017, Tk. 3,81,000)</li> <li>Prepared by the Comptroller and send to UGC for approval</li> </ul>	<ul style="list-style-type: none"> <li>Adequate budget</li> <li>department received a fund of about 14 crore Taka for lab equipment.</li> </ul>	Compliance



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- Do the total budget amounts for each year by themselves carry any relevant info?
- Is highlighted information consistent with evaluation?
- Has the highlighted issue been resolved in onsite visit?

## Case Studies

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Criterion 6: Curriculum and Teaching-Learning Process			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Curriculum	<ul style="list-style-type: none"> <li>160 cr hr (Equivalent to 140 cr hr as per BAETE criteria), Theory – 115</li> <li>Sessional – 28.5, Specialization- Thy-8</li> <li>Specialization- Lab-3, Industrial Tour – 1, Project/Thesis – 4.5</li> <li>Basic Science – 12, Math – 15, Humanities – 11, Engineering (Basic) – 48, SE – 21</li> <li>EE – 8.5, GE – 8.5, TE – 8.5, WRE- 9.5, CE Practice – 6, Project/Thesis – 4.5, Optional – 11</li> </ul>	<ul style="list-style-type: none"> <li>Verified during on-site visit</li> <li>Professional Practice and Communication is an elective course. It can be fixed as compulsory course.</li> </ul>	Compliance



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- Is highlighted comment a prescriptive recommendation?



## Case Studies

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Criterion 2: Financial and Physical resources			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
iv. Safety measures: infrastructure, practices, training and compliance	Information on safety measures are provided in SAR (pp.19-22). Central surveillance and monitoring system with more than 300 CCTV, security personnel, RFID access control, fire-fighting system etc. have been mentioned.	<p>Accommodation: Mentioned safety/security measures have been found to exist and functioning. At present there is no central Public Address system. Exit signs in all buildings are not properly installed nor illuminated. Passage (in front of gym) blocked by Table Tennis. Entrance of Transportation Lab is through another room and the path is blocked by chairs. Safety measure in Environmental Lab has been found inadequate. Concentrated acid bottles have been kept in open place (not under lock &amp; key). There was no 'Eye-wash' system was found lacking in the Environment Lab. Periodic fire/earthquake drills are not conducted. Safety culture/practices are lacking.</p>	<p>Concern Opportunity for improvement</p>

Is the evaluation consistent with the findings from onsite visit?

## Case Studies

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Criterion 8: Program Outcomes and Assessment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Course outcomes (COs)	COs for some courses have been outlined (Sec.8.1/pp.102-114); improper CO definition in different courses. (e.g. <u>Draw</u> the axial force, shear force...." has been designated as Cognitive: Level-2 and Psychomotor: Level-3)	COs have been mentioned for different courses as seen from the course files. But the constructive alignment is absent which indicates lack of understanding of the faculty members. Outcomes are not well documented/presented in course files.	Weakness
ii. Relationship between COs and POs	A CO-PO mapping has been provided (Sec.8.2/pp.117-125). <u>PO 8: Ethics is not addressed by any course in CO-PO mapping.</u>	<u>Relationship between COs and POs is observed but it shows improper constructive alignment between CO and PO.</u>	<u>Weakness</u>

Is the highlighted evaluation justified when the findings from SAR is as highlighted and this finding is not disproved in the onsite visit?

Is any example necessary to justify the finding from onsite visit? Is the evaluation consistent with this finding?



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## Case Studies

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Criterion 8: Program Outcomes and Assessment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
ii. Relationship between COs and POs	Done in SAR shown in Table 8.2. However, some of the courses are not shown in CoE Syllabus and do not match (e.g., Engineering Ethics, Some of the COs presented could be hard to evaluate (e.g., Novelty in Capstone Project, CO4). There are considerations on NON_Core courses.	Shows the relationship only for 13 courses. Not complete at current state.	Concern
iii. Achievement of POs as required by the BAETE	Done in SAR.	Achievement of POs are only for 13 EEE courses, but not correct though. Moreover, performance indicators for assessment of each PO, as required by the Washington Accord, are not defined.	Weakness

Is the evaluation supported by the recorded findings?  
Is any analysis made to find whether CO and PO are appropriately aligned?

Are all 12 POs achieved?  
Or is the process adequate to achieve these POs?  
Is the relationship only on paper or also in practice?



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## Case Studies

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Criterion 10: Interactions with the Industry			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Industrial Advisory Panel	Present in SAR	Present, but no evidence of involvement in curriculum development process.	Concern
ii. Participation of the industry in academic updates	Not present.	One meeting took place in 2017. However, the meeting minutes does not include academic discussion.	Weakness
iii. Students' opportunities to gain industrial experience	Not present.	Not present.	Weakness
iv. Others (specify)			
Overall criterion 10			Weakness

Is the evaluation justified from the findings?

Is the evaluation justified from the findings?



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## Case Studies

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### Criterion 8: Program Outcomes and Assessment

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
iii. Achievement of POs as required by the BAETE	<p>No student graduated under OBE system. No data or analysis of PO or CO achievement provided.</p> <p>No appropriate CO of any course mapped to PO4 or PO11.</p> <p><b>PO4:</b> CO3 of EEE213 (Solve problems related to rotor speed, flux, torque, developed power, efficiency in DC motor) maps to PO4. CO4 of EEE233 (Examine the significance of state machines in system design) maps to PO4. No other CO maps to PO4.</p> <p><b>PO11:</b> CO3 of EEE323 (Design different types of power electronic converters) maps to PO11. CO4 of EEE314 (To design a specific problem to the students, which after completion they will verify using hardware implementation) is mapped to PO11. No other CO</p>	<p>PO files not available.</p> <p>Course files confirm CO3 of EEE213 or CO4 of EEE233 (COs assessed by exams / theoretical assignment) not relevant to PO4. Similarly CO3 of EEE323 or CO4 of EEE314 not relevant to PO11</p>	?

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## Case Studies

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### Criterion 6: Curriculum and Teaching-Learning Process

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
iii. Final year design project	<p>No CO mentioned for the Capstone project (EEE400). Curriculum does not describe how Capstone Project culminates prior learning or how the POs are addressed.</p>	<p>No documentation of assessment of Capstone project except for the project reports and assigned grades. Topics mostly on design of practical systems. Reports similar to thesis reports under input based system. No CO or PO assessed through Capstone Project. Nothing in the reports relate to society, environment, ethics or project management.</p>	?

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## Forming the bigger picture

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Now that all the sub-criteria are fairly and objectively evaluated, how to make overall evaluation of a criterion?

- Overall evaluation is not equal to the weighted assessment of each sub-criterion under the criterion
- Not all sub-criteria contribute equally to the overall evaluation

Sub-criteria affecting the program directly much more critical than that relating to the program tangentially!

- Overall evaluation based on impact on the program
- No sub-criteria to be considered in isolation



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## Forming the bigger picture

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Criterion 1: Organization and Governance			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Compliance with acts and statutes			
ii. Statutory positions and bodies of the institution	<ul style="list-style-type: none"> <li>• Which sub-criteria most critical?</li> <li>• Which sub-criteria least critical?</li> <li>• Can we make this decision in advance?</li> </ul>		
iii. Existence of and adherence to policies			
iv. Grievance redress system			
v. Alumni association			
vi. Convocation			
vii. Others (specify)			
<b>Overall criterion 1</b>			



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## Forming the bigger picture

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### Criterion 2: Financial and Physical resources

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Finance and budget			
ii. Scholarship and financial aid for students			
iii. Accommodation for male and female students			
iv. Safety measures: infrastructure, practices, training and compliance			
v. Sports and recreational facilities			
vi. Placement center			
vii. Others (specify)			
<b>Overall criterion 2</b>			

- Which sub-criteria most critical?
- Which sub-criteria least critical?
- Can we make this decision in advance?



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## Forming the bigger picture

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### Criterion 3: Faculty Members

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Number and quality of full-time faculty members			
ii. Number and quality of part-time faculty members			
iii. Class size			
iv. Student-teacher ratio			
v. Involvement of faculty members in research, development and professional activities			
vi. Role of faculty members in directing the course of and improvements in the program			
vii. Training of faculty members on outcome-based education			
<b>Overall criterion 3</b>			

- Which sub-criteria most critical?
- Which sub-criteria least critical?
- Can we make this decision in advance?



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## Forming the bigger picture

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Criterion 4: Students			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Existence of and adherence to a well-formulated admission policy, including admission criteria	<ul style="list-style-type: none"><li>Which sub-criteria most critical?</li><li>Which sub-criteria least critical?</li><li>Can we make this decision in advance?</li></ul>		
ii. Policy for transfer students			
iii. Continuous monitoring of student performance			
iv. Advising and counseling			
v. Extra- and co-curricular activities			
vi. Professional society activities			
vii. Others (specify)			
Overall criterion 4			



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## Forming the bigger picture

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Criterion 5: Academic Facilities and Learning Environment				
Sub-criteria		Findings from SAR	Findings from onsite visit	Evaluation
i.	Library	<ul style="list-style-type: none"><li>Which sub-criteria most critical?</li><li>Which sub-criteria least critical?</li><li>Can we make this decision in advance?</li></ul>		
ii.	Classrooms			
iii.	Laboratories and equipment			
iv.	Full-time technical support staff for laboratories			
iv.	Internet and computing facilities			
v.	Others (specify)			
Overall criterion 5				



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## Forming the bigger picture

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### Criterion 6: Curriculum and Teaching-Learning Process

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Curriculum			
ii. Laboratory activities			
iii. Final year design project			
iv. Teaching-learning activities			
v. Academic calendar			
vi. Others (specify)			
<b>Overall criterion 6</b>			

- Which sub-criteria most critical?
- Which sub-criteria least critical?
- Can we make this decision in advance?



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## Forming the bigger picture

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### Criterion 7: Program Educational Objectives (PEO)

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Mission and vision			
ii. Program Educational Objectives (PEOs)			
iii. Relationship between the POs and PEOs			
iv. Process of PEO measurement			
v. Others (specify)			
<b>Overall criterion 7</b>			

- Which sub-criteria most critical?
- Which sub-criteria least critical?
- Can we make this decision in advance?



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## Forming the bigger picture

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Criterion 8: Program Outcomes and Assessment			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Course outcomes (COs)			
ii. Relationship between COs and POs	<ul style="list-style-type: none"> <li>Which sub-criteria most critical?</li> <li>Which sub-criteria least critical?</li> <li>Can we make this decision in advance?</li> </ul>		
iii. Achievement of POs as required by the BAETE			
iv. Achievement of additional POs			
v. Others (specify)			
Overall criterion 8			



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## Forming the bigger picture

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Criterion 9: Continuous Quality Improvement (CQI)			
Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Feedback from students			
ii. Feedback from course instructors			
iii. Feedback from external stakeholders	<ul style="list-style-type: none"> <li>Which sub-criteria most critical?</li> <li>Which sub-criteria least critical?</li> <li>Can we make this decision in advance?</li> </ul>		
iv. CQI loops			
v. Addressing deficiencies, weaknesses and concerns identified during the previous accreditation evaluation (if applicable)			
vi. Others (specify)			
Overall criterion 9			



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## Forming the bigger picture

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### Criterion 10: Interactions with the Industry

Sub-criteria	Findings from SAR	Findings from onsite visit	Evaluation
i. Industrial Advisory Panel			
ii. Participation of the industry in academic updates	• Which sub-criteria most critical?		
iii. Students' opportunities to gain industrial experience	• Which sub-criteria least critical?		
iv. Others (specify)	• Can we make this decision in advance?		
<b>Overall criterion 10</b>			



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## Summary

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- ET report is the primary document on which accreditation decision is based on
- ET report is the primary document which provides feedback to institutions for improvements
- ET report is the primary document to show that the graduates of accredited programs attain POs which are substantially equivalent to those of WA signatories
- ET report should demonstrate the competence of the evaluators
- ET report should indicate that the accreditation evaluation standard is as per WA signatory standard



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