ROLE OF EVALUATORS IN OUTCOME BASED ACCREDITATION

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Outline

- Introduction
- Tasks of evaluator during accreditation
- Introduction to OBE
- Conflicts-of-interest
- Review of SAR and pre-visit meeting
- Onsite visit
- Evaluation team report
- Confidentiality
- Conduct
- Professionalism
- Case studies

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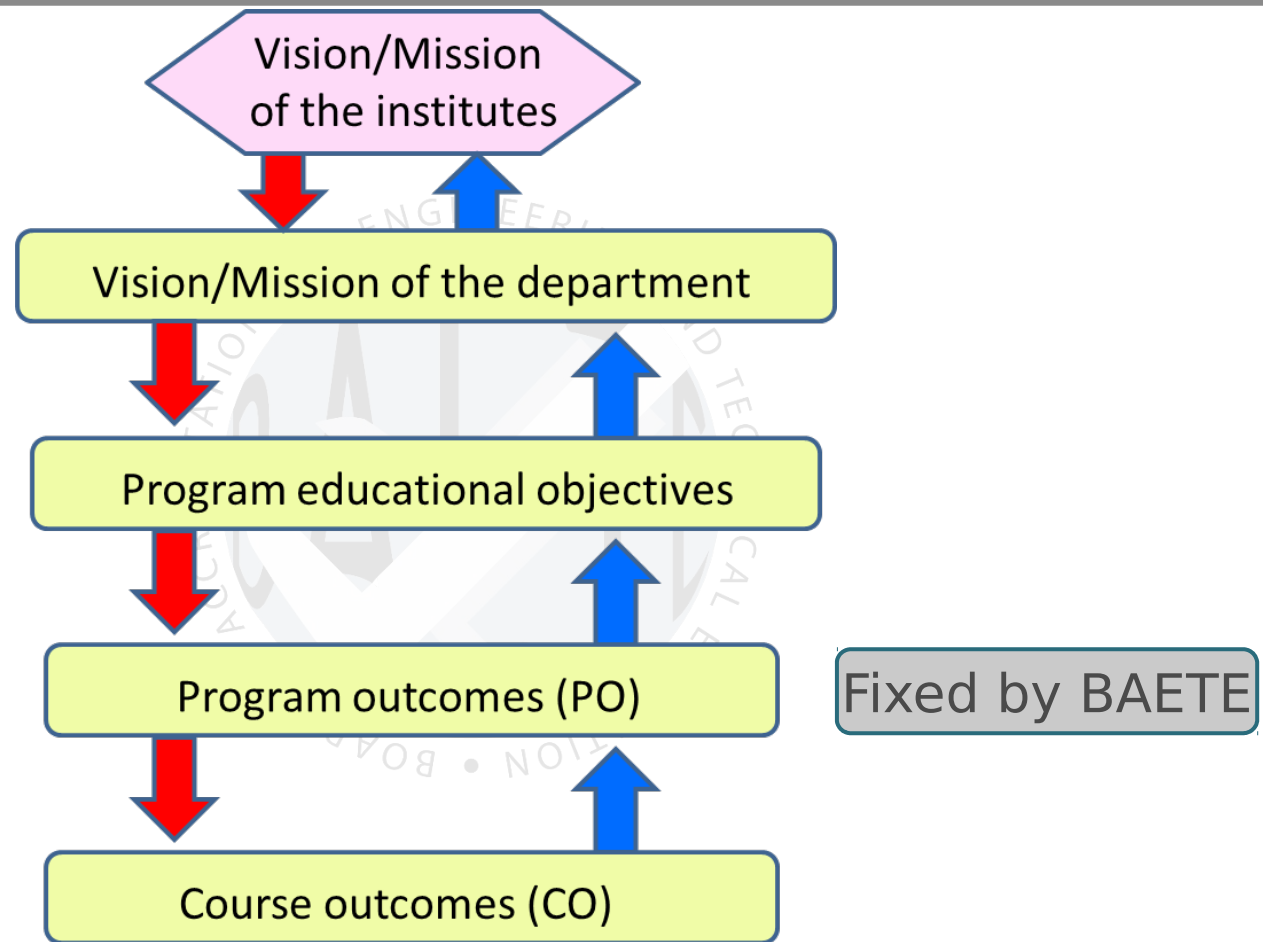ENGINEERING AND TECHNICAL EDUCATION

Who are the evaluators?

- They are experts who understand and know BAETE manual and accreditation guidelines and practices well
- They know Outcome Based Education well
- They are the eyes and ears of BAETE
- They provide BAETE evidence based analysis for accreditation decision
- They ensure that facts are collected and analyzed
  as per BAETE criteria and requirements

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Structure of OBE

SMART PEO/PO/CO

PEO

- PEOs are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve. PEOs are assessable based on the attributes and accomplishments of graduates, preferably those who have worked for 3 to 5 years after graduation.

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Sample Vision/Mission

Vision: The vision of the department is to become center of excellence in teaching and research and to produce industry ready computer professionals to meet the challenges of the 21st century.

Mission: The mission of the department is to groom our students with the quality of leadership skill, complex problem solvers, and life long learners who will be able to create, share and apply their knowledge in multidisciplinary areas to earn benefit for the humanity.

PO

1.Engineering knowledge: Apply knowledge of mathematics, natural science, engineering fundamentals and Computer Science and Engineering to the solution of complex engineering problems.

2.Problem analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3.Design/development of solutions: Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4.Investigation: Conduct investigations of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5.Modern tool usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations.

6.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 and solutions to complex engineering problems.

7.Environment and sustainability: Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts.

8.Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

9.Individual work and teamwork: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10.Communication: 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.

11.Project management and finance: Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's 13 own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12.Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Departmental Mission

The mission of the Electrical Engineering and Computer Science Department is to produce graduates who are capable of taking a leadership position in the broad aspects of electrical engineering and computer science. Our graduates:
- ❑ Understand the basic principles that underlie modern electrical, electronic and computational technology;
- ❑ Are able to apply creatively their understanding of science and engineering principles to the solution of problems arising in whatever career path they choose;
- ❑ Are sensitive to the environmental, social, safety and economic context in which their work is done, and possess a strong commitment to ethical practice within that context;
- ❑ Are able to communicate their ideas and positions clearly and concisely, both orally and in writing;
- ❑ Are aware of the requirement for and possess the ability to engage in lifelong learning which will be necessary for continuing high performance in whatever career path they choose.

Sample PO to PEO Mapping

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12
PEO1	X		X		X					X		
PEO2						X	X	X			X	
PEO3		X		X					X			X

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Outcome Driven Activities & Assessment

Sample Course Profile

CO	PO	Taxonomy domain/level	Delivery methods & activities	Assessment tools
Describe the underlying physics and characteristics of different electronic properties of materials	PO1	Cognitive/ Understand	Lecture, Q/A, discussion, video presentation	Class tests, Mid Terms, Final
Calculate responses of materials related to different electronic properties	PO1	Cognitive/ Apply	Lecture, Q/A, discussion, in-class problem solution	Class tests, Mid Terms, Final
Compare different materials and select the most appropriate one for specific electrical engineering application	PO2	Cognitive/ Evaluation	Lecture, Q/A, discussion, video presentation	Assignment report, presentation
Demonstrate the capacity to extend learning beyond classroom lectures and activities	PO12	Affective/ Valuing	Q/A, discussion	Presentation
Prepare formal technical report	PO10	Affective/ Valuing	Lecture, Q/A, discussion	Assignment report

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Outcome Driven Activities & Assessment

Exam questions should be targeted towards CO achievement at
appropriate domain/level of taxonomy and complexity

Non exam assessment tools should also be targeted and
should use suitable rubrics

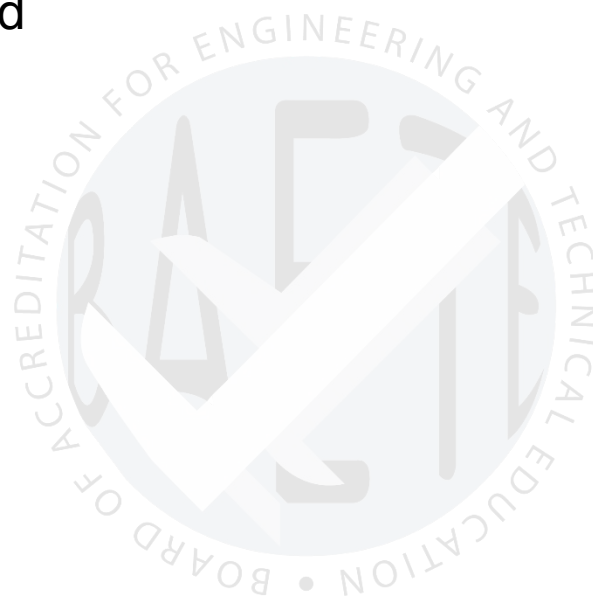Evidence of assessment of achievement of CO's (course level)

Also need evidence of assessment of achievement of PO's
of the graduating cohort (program level)

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Sample CO and Question Mapping

Example of CO and Question

Rubric Example

Evaluator tasks during accreditation

- Ensure that there is no conflict-of-interest
- Review SAR and perform preliminary evaluation
- Participate in pre-visit meeting(s) and share findings
- Conduct 3 day onsite visit
  - Assess factors not resolved from SAR
  - Meet with different stakeholders
  - Examine documents, e.g., course files, files demonstrating outcome achievement
  - Review infrastructure and facilities
  - Analyze findings and reach evidence based conclusions
  - Conduct exit meeting
- Prepare evaluation team report

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Conflicts-of-interest

No member of the evaluation team may have any conflict-of-interest with the program or the institution. Disclosure must be at the first opportunity

- A present or former faculty or staff member
- Had applied for employment in the past
- Present or past member of any committee
- Current or past involvement in any for-profit activity
- Spouse studying or working in any capacity
- Child present or past student
- Close relative student or employee ………..

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Review of SAR & Pre-Visit Meeting

- Each evaluator independently reviews SAR and records preliminary findings for each criterion and sub-criterion
- Requests team chair to contact institution if any additional information on any topic is needed
- Findings of each evaluator are shared and preliminary evaluation of each criterion is made
- Team chair distributes criteria among team members who will be responsible for evaluation of those
- The sub-criteria which require further exploration in onsite visit are identified. Strategy for onsite visit decided

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Onsite Visit (within 12 weeks)

Purpose of the onsite visit

- Assessment of Qualitative factors which cannot be documented in written submission
  - Intellectual atmosphere, morale, professional attitudes, quality of staff, and students
- Examination of materials compiled by educational institution, i.e. those which cannot leave the campus
  - Examination papers, student reports, instruction materials
- Clarify issues in the written submission by educational institution

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Onsite Visit (within 12 weeks)

Major activities during the onsite visit

- Examine course materials to verify
  - Course contents are up-to-date and consistent with objectives
  - Course pre-requisites are appropriate
  - Delivery methods and learning activities consistent with COs
  - Issues of complex engineering problems and complex engineering activities are addressed

- Examine assessment and evaluation materials to verify
  - Assessment tools are appropriate to measure CO achievement
  - CO achievements are assessed and documented
  - PO achievements are assessed and documented

- Examine transcripts

Onsite Visit (within 12 weeks)

Major activities during the onsite visit

- Evidences from Examination of Exhibits
  - Sample of teaching material
  - CV of faculty staff, publications
  - Sample of exam papers
  - Sample of exam scripts – excellent, average, poor
  - Transcript of graduates
  - Sample project/intern reports
  - Sample of industry attachment report
  - Samples of student feedback form
  - Internal of external reviews of course
  - Graduate employment statistics
  - Other documents requested by evaluation team

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Ref-Dr. K.S. Lock

Onsite Visit (within 12 weeks)

Complex Engineering Problem Requirement of WA

- Involve wide-ranging or conflicting technical, engineering and other issues
- Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models
- Requires research based knowledge
- Involve frequently encountered issues
- Involve diverse group of stakeholders
- Have significant consequences in a range of contexts
- High level problems including many component parts or subproblems

Ref-Dr. K.S. Lock

Onsite Visit (Cont)

- Meeting with faculty members to assess (not limited to)
  - Teaching philosophy of faculty members
  - Initiatives taken to remain up-to-date
  - Professional engagement
  - Level of understanding of OBE
  - Level of understanding of assessment of outcomes
  - View on the strengths and weaknesses of the program

Program head, dean, etc should not be present in the meeting. Talking to individual faculty members in private can be an effective way. In that case, the faculty members to be interviewed should be carefully selected.

Onsite Visit (Cont)

- Meeting with students to assess
  - Level of satisfaction
  - Enthusiasm for the program
  - Quality of teaching
  - Adequacy of advising and academic support from faculty/TA
  - Admission process
  - Adequacy of labs
  - Adequacy of facilities (class rooms, library, etc)

No staff should be present. Selection of the pool of students for interview is critical. The pool should be representative of the upper level student body with a balanced mix of academic performance and gender.

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Onsite Visit (Cont)

- Visits to labs, class rooms and support facilities
    - Verify the infrastructural quality of lass rooms
    - Verify the adequacy of number of labs, types and quantities of equipment
    - Assess the safety, security and access issues
    - Assess the level of support provided to the program. Support facilities may include the library, office of the registrar/controller, placement center, medical center, sports facilities, etc

It may be more time efficient if the members of the evaluation team conducts the visits separately.

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Onsite Visit (Cont)

Other activities during the onsite visit

- Opening meeting with the Head of Institution
- Meeting with the support staff of the program
- Meeting with alumni/employers
- Examine documents demonstrating CQI process
- Examine documents related to governance, finance (if needed)
- Visit to the residential facility (if needed)
- Debriefing the program head before exit meeting to prevent shock and surprise

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Onsite Visit (Cont)

Sample assessment form for evaluators

Onsite Visit (Cont)

Analyze findings and reach conclusions

- Holistic approach should be adopted in evaluation (how does the issue address the concerned program?)
- Each observation to be categorized under appropriate criterion and sub-criterion
- Findings should be consolidated to get the big picture
- Nitpicking or bean counting should be avoided
- No criterion or sub-criterion should be analyzed in isolation
- Isolated evidence should not be used to make general conclusions

Onsite Visit (Cont)

Analyze findings and reach conclusions

- Absence of evidence should not be treated as non-compliance unless the evidence is specifically asked for
- Trend or pattern is what evaluators should look for
- Use of "compliance," "concern," "weakness," "deficiency" should be as per guideline given in manual and should not be arbitrarily or subjectively interpreted
- Personal bias, perception or practice in evaluator's own institution should not be basis for any conclusion
- Quantitative or prescriptive evaluation should be avoided

Onsite Visit (Cont)

Definitions

- **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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Onsite Visit (Cont)

<p style="text-align:center; color:red">Exit meeting</p>

- Evaluation team chair chairs the meeting
- The institution may not respond to the exit statement except for correction of factual error. This should be communicated at the beginning of the meeting
- Assessment of each criterion in terms of "compliance," "concern," "weakness," or "deficiency" is verbally communicated. Brief justification for each assessment is presented
- Evaluation team may not propose any specific remedial measure to any issue. Recommendations to

Evaluation Team Report

- To be submitted within 3 weeks of visit
- Report to be as per BAETE criteria and requirements
- Report should be evidence based and specific
- Justification for each assessment should be adequate
- May include a statement of compliance
- May not include any subjective narration
- May contain general recommendation
- May not contain any prescriptive recommendation on how to address an issue

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Confidentiality

- All information provided by the institution are confidential. All findings of the evaluation team during onsite visit are confidential

- Information may not be used for any purpose other than accreditation evaluation

- Information may not be shared with a third party for any purpose

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Conduct

- Composure
  - Communicate effectively under all situations
  - Remain focused to the topic at hand during meetings with stakeholders. Let not allow the discussion to wander
  - Do not lose temper in any circumstance
- Collegiality
  - Accreditation evaluation is a peer level task
  - Evaluator should not feel/express any superiority
  - Evaluator should not be intimidating or abusive
  - Evaluator should be polite and patient
  - Cynical, demeaning or sarcastic language to be avoided

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Conduct (Cont)

- Diligence
  - Prior preparation of evaluator is essential
  - SAR should be reviewed in detail and issues which need further exploration should be identified
  - Findings should be exchanged in pre-visit meeting and onsite visit plan should be decided
  - During meetings with stakeholders, evaluators should know what they are looking for and they should guide discussions accordingly

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Conduct (Cont)

- Gifts, favors and meals
  - The institution should be notified in advance that the practice of giving evaluators any gift is unacceptable
  - Evaluators should not accept any gift of value
  - Evaluators should not ask anyone from the institution for any favor or anything of personal nature
  - All meals should be simple working meals
  - No meal should become a formal or a social event
  - No one from the institution should join the evaluation team during any meal

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Professionalism

- Team work
  - Evaluators should be cooperative and collaborative with one another
  - Evaluators should behave cordially with one another
  - Negative personal feeling, if any, should be set aside for the common goal of fair and evidence based evaluation
- Formality
  - Accreditation is a formal, professional activity
  - Evaluator's behavior with anyone from the institution should not be overt friendly or overt personal. Such behavior by anyone from the institution should not be entertained

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Professionalism (Cont)

- Decorum
  - Evaluators are expected to attend all activities during the onsite visit
  - Evaluators are not expected to use mobile phone during onsite visit. This is particularly important during meetings with stakeholders
- Punctuality
  - All meetings, visits and activities during the onsite visit should start and end on time
  - The institution should be notified about the importance of punctuality in advance

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Examples – S/C/W/D?

Teaching workload calculation does not follow a standard mechanism, especially for associated lab courses. As a result, uneven distribution of work hour may create dissatisfaction among faculty members. For example, some teachers take 4 theory courses and 1 lab course with a total of 15 hours of direct teaching, while some others are loaded with only 4 theory courses with total of 12 hours of direct teaching. The extra 3 hours of lab is not considered as overload.

Salary increment policy of the faculty members should be more transparent

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Examples– S/C/W/D?

The university does not have transportation facilities for the students.

There is no adequate safety measures for disaster recovery.

Department should take initiative for industry funded projects and collaboration   for professional development of the teachers and students.

Class size is 30/35/40.

Student teacher ratio 35:1 / 60:1

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Examples– S/C/W/D?

Mission and Vision of the university has not clearly mentioned in the document for accreditation and it is not properly focused in different documents. There is no clear difference between the mission and vision statement.

The university does not have any plan for accommodation of the teachers and students in future.

There are few faculties with degree in CSE from reputed universities are in the department.

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Dos and Dont's

Reviews

OBE demonstration