

Exemplar

PROGRAM EVALUATION REPORT (ACCREDITATION/RE-ACCREDITATION)



Pakistan Engineering Council

<Name of HEI>

<Name of the Program>
<Visit Type>

<Date>

1. OVERVIEW

The visitation team appointed by Engineering Accreditation Board (EAB) of Pakistan Engineering Council (PEC) conducted a two-day accreditation visit to <Name of HEI>, to evaluate UG program of <Name of program> from <date>. A pre-visit meeting was held on <date> to exchange findings of the Program Evaluation team members (PEVs) based on the review of Self-Assessment Report (SAR) of the program submitted by the institute and previous evaluation report of the last accreditation visitation team. During the pre-visit meeting, a list of queries was consolidated to seek further clarification and understanding on the program. Also based on the study of SAR, some aspects related specifically to OBE and CQI implementations were identified as requiring in-depth study of the related documents for evidences. Subsequently specific documents / evidences to be examined during the visit were also chalked out. Based on these discussions, the schedule of activities for the conduct of first day visit was slightly modified and communicated to <name>, the focal person appointed by the Institute for the conduct of visit.

During visit, the visitation team met with <head of the institution>. Briefing on the institution and the program was given by the <name>. The program evaluators also visited several program facilities, i.e. classrooms, conference room, laboratories, library, auditorium, mosque and various sports facilities. Apart from comprehensive review of documents and evidences pertaining to various accreditation criteria, the team also held meetings and interviews with all the stakeholders such as students, faculty, staff members, and alumni.

Based on detailed visit of the facilities and thorough review of the documents / evidences, following are highlights of the findings by the Program Evaluation Team about the program:

- i. The depth and breadth required in the curriculum is there as far as the contents and its delivery is concerned. Evaluation of students' academic performances is also at an adequate level but the assessment methodologies for PLO attainment are limited in nature and scope. A couple of concerns / weaknesses related to the exposure to lab work and for the inclusion of course and faculty strength related to water resources have been identified.
- ii. QMS is in place and is centrally administered by <HEI>.
- iii. Procedures and policies for implementing CQI at course and curriculum levels are in place and being practiced; however, there are weaknesses in defining and implementing CQI at program level.
- iv. The program has recently started its shift-over towards OBE, and is in process of defining and refining various aspects related to OBE design and its implementation. Hence, a number of weaknesses have been found in various facets of OBE and OBA methodologies and their implementations.

Overall, the Program Evaluation team found no deficiency as far as compliance to all 9 accreditation criteria is concerned. However, there are a number of weaknesses related primarily to non/partial compliance with several sub-clauses of a number of main criteria, these are more pronounced specifically in Criteria-1: Program Educational Objectives (PEOs), Criteria-2: Program Learning Outcomes (PLOs) and Criteria-8: Continuous Quality Improvement (CQI).

2. GENERAL INFORMATION

<HEI> was established in ----- as -----, and later was upgraded to College and shifted at its present location ---- in -----. The functions of the institute aimed at producing professional ----- Engineers for -----

<Name of program> has a long history of accreditation by PEC and has so far graduated ---- Engineers. The last accreditation visit was conducted by PEC in <date>, and the program was subsequently re-accredited for ?-years, i.e. for intake batches ---, --- and -----.

The program is offered as a full-time program for four years duration with pre-admission qualification of F.Sc. (Pre-Engineering) or equivalent with a minimum of 60% marks followed by --- entry test. The bases for open merit determination are:

- I. ----- Entry Test -----%
- II. HSSC/A-Level/Equivalent -----%
- III. SSC/O-Level -----%

The summary of total enrolled students and programs faculty is given below:

Sr. No.	Intake Batch	No. of Enrolled Students	No. of Sections
1	Fall-2012	125	2
2	Fall-2013	103	2
3	Fall-2014	98	2
4	Fall-2015	109	2
TOTAL		435	8

Note: Student Data as per Table 4-2 on Page 72 of SAR

	Permanent Faculty			Visiting Faculty	
	Ph.D	M.Sc	B.E/B.Sc	Ph.D	M.Sc
Core Engg. Subjects	10	05	-	-	-
Shared Engg. Subjects	1	1	-	-	-

Note: Faculty List as per Annexure-I on Page 206 of SAR

** Non-countable engineering faculty (as per Sec. 3.2.5.2 of EAB's Manual 2014)

The department has been increasing its student intake for the past 3-4 years without taking formal approval from PEC. Now in order to regularize its intake strength, <HEI> has formally applied to PEC for conducting a zero-visit for enhancement of its student intake. Considering this, computation of student-teacher ratio is carried out in the following for two cases, i.e. one considering the present student strength and the other considering the student intake of the last year as the reference intake strength.

Computation of Student-Teacher Ratio:

1) Considering Present Student Strength:

Present Student Strength = 407

Engineering Faculty:

Countable = 17

Non-Countable = 0

i- **Student : Teacher Ratio = 407/17 = 23.94:1**
(as per guidelines of Sec 3.2.5.2 of Accr. Manual-2014)

ii- **Student : Teacher Ratio = 407/(17+2) = 21.42:1**
(Relaxing guidelines of Sec 3.2.5.2 of Accr. Manual-2014)

2) Considering annual intake of 180 students :

Expected Student Strength = $120 * 4 = 480$

Engineering Faculty:

Countable = 17

Non-Countable = 0

i- **Student : Teacher Ratio = 480/17 = 28.23:1**
(as per guidelines of Sec 3.2.5.2 of Accr. Manual-2014)

ii- **Student : Teacher Ratio = 480/(17+2) = 25.26:1**
(Relaxing guidelines of Sec 3.2.5.2 of Accr. Manual-2014)

3. GENERAL OBSERVATIONS

Criterion-1: Program Educational Objectives (PEOs)

<HEI> has well-defined vision and mission statements. <HEI> has also defined a mission statement for its Civil Engineering program. In addition, the department has articulated PEOs for its Civil Engineering program, which has been publicized to some extent within the department through posters and postings on department notice-boards. However, the statements of these PEOs are more like restatements of Program Learning Outcomes (PLOs), indicating that there exists a general lack of understanding in the meaning of PEOs and EAB's requirements in this regard. Thus there is a need to revise these PEOs appropriately, in consistency with the program mission, so that they should reflect the targeted professional and career accomplishments of the program graduates after 4 to 5 years of graduation.

The process of formulating PEOs should involve both internal as well as external stakeholders, and should incorporate their formal feedback. There is little evidence of all stakeholders' involvement in defining PEOs. It is recommended that all the stakeholders should be involved in developing PEOs.

As far the formal process for assessing and evaluating the attainment of PEOs, at present there is no well-defined process and support administrative setup for the Civil Engineering program. The visitation team was informed that the *Alumni* and *Employer Surveys* currently being conducted by <HEI> are used to measure PEO attainment. However, the format of these *Survey Forms* is quite generic and not program specific, so these cannot provide useful information about the attainment of PEOs in an objective manner. *Key-Performance Indicators (KPIs)* for the assessment and evaluation of PEOs are also yet to be defined. <HEI> needs to rationally define KPIs and also develop Questionnaire / Survey Forms to objectively assess these specific performance indicators.

<HEI> has only recently started the shift towards OBE and has made some reasonable efforts in this regard; however, evaluation of Criterion-1 being one of the prime focuses of OBE& OBA, the team has found a number of weaknesses in compliance to this criterion.

Criterion-2: Program Learning Outcomes (PLOs)

<HEI> has adopted all the 12 graduate attributes outlined in EAB's Accreditation Manual-2014 as the Learning Outcomes for its **---** Engineering program. The PLOs have been locally publicized within the department through posters and notice-boards; however, they need to be well-publicized, e.g. through **<HEI>** website, prospectus, etc. The mapping of these PLOs to PEOs has also been carried out reasonably.

PLOs mapping on curriculum courses has been carried out, and the efforts have also been made to define specific CLOs for each subject course. However, there are weaknesses in these course-PLO mappings in terms of PLO contributions of courses and the extent of coverage for higher taxonomy levels in some PLOs, which call for a critical review of these assignments. Similarly, a closer look at the CLOs defined for various courses shows inconsistency in the use of appropriate action verbs commensurate with the targeted taxonomy levels.

As far a formal process of assessment and evaluation of PLOs being in place, there are evidences that parts of it are being practiced; however, it does not provide comprehensive coverage of all facets of OBA. In particular, KPIs are though defined for cohort level attainment of CLOs and PLOs, but there is lack of clarity about KPIs used for assessing attainment of PLOs for individual student at course level as well as at program level. A MS Excel based program, developed by **----**, is currently being used for assessing the attainment of individual and cohort level CLOs, but assessment of PLO attainment for the course is neither yet covered nor was the departmental faculty/management clear about the policy and the process. The use of Rubrics for the assessment of complex outcomes which are not easily quantifiable, e.g. communication skills, teamwork, lifelong-learning, etc. is not well understood by the faculty and calls for more rounds of training. Similarly more clarity is needed in the design and use of indirect tools for assessment of PLOs.

Efforts have been made to get the faculty and students on board about the OBE methodologies. Several workshops have been conducted in this regard since Fall 2014. Course instructors were asked to chalk out CLOs for their respective courses and also suggest the mapping of these CLOs to the appropriate PLOs. These mappings were discussed in the Departmental Board of Studies (BOS) and then finalized. However, the faculty members interviewed during the accreditation visit were found not being well acquainted with OBE concepts, especially in terms of defining CLOs with appropriate taxonomy levels, the range of direct-vs-indirect assessment tools appropriate for their courses, use of Rubrics and the assessment methodologies for Psychomotor and Affective domains, and defining/formulating a complex problem in light of PEC manual 2014 guidelines. Faculty members still require more training in the implementation of OBE system. There is a need to put together an effective and comprehensive mechanism to assess the attainment of the CLOs and the PLOs using formative / summative approaches.

As the evaluation of Criterion-2 is a major focus of outcomes-based education system, the team has determined that the program has a number of weaknesses in demonstrating compliance to this criterion.

Criterion-3: Curriculum and Learning Process

<HEI> being one of the oldest **---** Engineering program in the country has well developed **---** Engineering Curriculum. The curriculum is bench marked with NCRC of HEC, and is more or less same as that of **---**Engineering program at **<HEI>**. About 35% of courses are related to allied subjects, while about 65% are related to core field (**---**engineering). However visitation team suggests that the courses of **---** should be made part of compulsory curriculum, or it should be offered on regular basis. Similarly important topics like **--** should be made a part of a compulsory subject, rather than that of an elective course.

CLOs for each subject have been formulated and mapped with the PLOs. Mechanism of CLO & PLO accomplishment for individual student, and for cohort need to be further improved. Complex engineering problems are being defined by individual faculty member for his/her relevant subject, however, understanding of complex engineering problem and complex activity need to be further strengthened in light of guidelines provided in EAB's manual of accreditation. Use of rubrics for the assessment is quite limited, and that too needs improvement. Specifically rubrics for the assessment of final year projects though have been drafted but have some basic flaws that need to be rectified.

As far the availability of labs is concerned, sufficient numbers of spacious labs are present covering all branches of ---Engineering, including ---, ---, ---, and---. Need for up-gradation / modernization of lab equipment was highlighted in the previous visit report, and has yet to be completely met. There is a need to modernize all the labs by adding new equipment and replacing the out of order/outdated/obsolete ones.

One of the prominent features of lab facilities is the *Display Center* housing samples of various --- engineering materials. It has plumbing fixtures, steel reinforcement (in caged form), various types of timber (wood), glass, artificial wood (MDF, ply boards, laminations), ceramic tiles, marble tiles, bathrooms fittings, doors, windows, etc. Visit of this display center provides first-hand knowledge to young engineers with the properties and characteristic of various building materials to be encountered in the field.

The team has observed no deficiency in the curriculum; however, there are a few minor weaknesses and a few concerns which needs to be addressed. In addition, a observations have been made for further improvement of the program.

Criterion-4: Students

Student induction has been in line with the basic criteria laid down by PEC, i.e. minimum of 60% marks in FSc. (pre-engineering). However, the program intake has been increasing over the past few years, with the latest batch comprising of 187 students, resulting in student: teacher ratio exceeding the maximum limit set by EAB. This has resulted into larger class sizes, as high as 55 per class and lab group of up-to 10 student per group. Proportionate increase in the number of work stations in the labs has not been made.

Interaction with the students showed that they are generally satisfied with facilities and the availability of instructors for off-class guidance.

The team has observed a reasonable degree of compliance to this criterion; however, a few minor weaknesses are there which needs to be removed.

Criterion-5: Faculty and Support Staff

Departmental faculty members are well qualified covering all the major areas of the curriculum. Most of them have expertise in various areas of specializations within --- Engineering being offered at the department; however, PhD Faculty in the area of --- should also be inducted to provide adequate coverage to this important area of --- Engineering as well.

A concern was raised in the last visit report about the shortage of lab engineers, which persists to date. The number of lab engineers does not match with the number of labs in the department which is a serious weakness as per EAB guidelines, i.e. each lab being supervised by a lab engineer and having adequate supporting technical staff. Though each lab has its dedicated support staff but even to date each lab does not have a lab engineer supervising the lab. This lingering issue must be addressed at priority and compliance to this must be reported to EAB within 3-months.

Faculty retention is also an area of concern. Since last visit of PEC, more than 10 faculty members have left the <HEI>, although new faculty members have been inducted to replace them. This is primarily attributed to the fact that most of the faculty members are uniform officers who are posted here only for a specific term, i.e. 2-3 years, after which they are posted somewhere else. However, for the consistency and continuation of program policies, a certain percentage of faculty should be ensured on permanent basis in the department.

Due to continuous increase in the induction of students during the last 3-4 years, student:teacher ratio has increased from its value of 23:1 during the last visit in --- to 28:1 at present. It is further going to deteriorate if last-year intake of around 180 students is allowed for future intakes too, as requested in the "Change of Scope" request by <HEI>. As such the number of faculty members relative to the total student population is an area of serious concern with the future expected intakes.

<HEI> has well laid down policies for the training of newly inducted faculty members. In addition, newly inducted faculty members are also guided / trained through on job mentoring by senior colleagues. Seminars on OBE trainings have been conducted and administration has planned more training sessions in the near future.

The team has found the program to be generally in compliance to this criterion, except for the weakness in terms of student:teacher ratio, which would become severe if increased student intake is allowed to continue without first inducting more qualified faculty, to bring this ratio consistent with EAB's requirements.

Criterion-6: Facilities and Infrastructure

Lab facilities are available in sufficient numbers. --- Lab may be included in future plans. Concern about old equipment needs to be addressed by the administration on priority.

With the gradual increase in student intake, the library space and library resources should also be enhanced proportionately. Sufficient number of computer facility with internet service is available on campus.

Allied facilities such as sports grounds, swimming pool, cafeteria, mess, mosque, medical, etc. are kept in good condition, and are being utilized efficiently.

Student's counseling for job hunting is provided through events like job fairs and open houses. There are ample opportunities for extracurricular activities, which are organized quite regularly. During the visit PEC team had the opportunity to see the students and staff of <HEI> participating in 'Spring Festival', which was organized around the campus.

The team has found the program to be in full compliance to this criterion.

Criterion-7: Institutional Support and Financial Resources

<HEI> being a public sector institute has been supported by Government through ---and ---, in addition to fee from self-sponsored students. Financial commitments from these sources should be clearly segregated and spelled out.

Self-generated (e.g. through testing/consultancy services) financial resources are limited. Need is there to enhance this financial resource as well.

Lab modernization is pending for quite some time, despite concerns raised by the last visit team. Development allocations from <HEI> must be enhanced, specifically to cater for the requirements of acquiring additional lab equipment in the wake of increased student intake over past few years.

Although student intake has been increasing over past 3-4 years, the recurring budget has been reduced, e.g. from Rs.---M for FY 2012-13 to Rs.--- for FY 2013-14.

Budget for R&D pursuits and presentations/publication is quite minimal, i.e. Rs.---K for FY 2012-12, Rs.---K for FY 2013-14, and only Rs.---K for FY 2014-15 spent to date. R&D allocation must also be enhanced.

These concerns identified by the visitation team should be addressed on priority.

Criterion-8: Continuous Quality Improvement

Department has made visible efforts to address the concerns / weaknesses raised during the last accreditation visit, as a result of which there are noticeable improvements in certain areas identified as weaknesses / concerns in the previous visit report. However, not much has been done to address the weaknesses found in terms of the number of workstations in the labs and the number of Lab Engineers engaged to supervise these labs.

Departmental faculty has been further strengthened by the induction of qualified PhD faculty; but at the same time the continuous increase in student intake over the past few years has led to a quite high value of student-teacher ratio, i.e. more than the maximum set by EAB accreditation Manual-2014 --- suggesting that the increase in departmental faculty has not been proportionate to the increase in student intake.

As far as the faculty qualifications and number of publications by faculty members since last accreditation visit, there has been substantial increase in the number of faculty publications and the number of PhD faculty has also increased; there is also a significant increase in the number of industrial projects / consultancies undertaken by the departmental faculty members.

The department must take immediate actions to remove the pending weakness identified / raised during the last accreditation visit, and also in the refinement of its formal processes and their implementation for ensuring closure of the CQI loop.

The visitation team has found a few weaknesses in compliance to this particular criterion.

Criterion-9: Industry Linkages

The involvement of industry in curriculum development though there but can only be termed as being minimal. This is because there is no formal mechanism in place for receiving inputs from practicing engineers and local industry in the curriculum development. However, the department has in place a formal mechanism for seeking feedback from the employers in Industry for the assessment of attainment level of PEOs. The questionnaire being used to seek feedback is though not very appropriate for comprehensive evaluation of the attainment of PEOs and needs to be revised.

There is a need for a separate office with adequate staff for establishing liaison with the industry in order to create opportunities for the students to acquire industrial experience via internship and design projects / ideas addressing the local industry needs / problems. There are also a number of sponsored / supervised by Professional-Engineers working in the industry who are supervising a decent number of student groups in their Final-Year projects. Some of the departmental faculty members with industrial experience have played an important role in establishing such industry linkages.

The department must take immediate actions to remove the concerns raised in compliance to this criterion through formal involvement of industry in the curriculum review process.

The visitation team did not find any deficiency or weakness in compliance to this particular criterion; however, there are a few concerns raised in this regard.

4. ACKNOWLEDGEMENT

The EAB visitation team would like to thank the entire faculty of <HEI> in general, and the <head of HEI>, the Dean ---- and the focal person ----- in particular, for their hospitality and cooperation for a smooth conduct of evaluation.

5. PROGRAMME EVALUATION WORKSHEET

The observations of the EAB visitation team while evaluating the BE---- Engineering program of <HEI> for compliance to various accreditation criteria are attached as Appendix-1: Program Evaluation Form.

6. RECOMMENDATIONS BY VISITATION TEAM

The institute had applied for accreditation under the new Accreditation Manual-2014, i.e. as a Tier-1 institute practicing Outcome-Based Education system. Based on the OBA system of accreditation, the team evaluated the program of ---- Engineering for its compliance to the Nine accreditation criteria and found a number of weaknesses primarily related to the compliance of Criteria-1: Program Educational Objectives (PEOs), Criteria-2: Program Learning Outcomes (PLOs) and Criteria-8: Continuous Quality Improvement (CQI).

As a result, the team recommends to EAC that the program may be accredited under Tier-2 for a period of two (2) years, i.e. for intake batches 2011 & 2012.

In addition, the program resources were also evaluated for the possible increase in take requested by the institute. Based on the prevailing state of program resources, especially the faculty strength, the laboratory equipment and staff, and other allied facilities, the program should not be allowed to increase its intake beyond 160 students per year and that too if additional faculty is immediately hired to bring the student:teacher ratio below the limit set by EAB.

Keeping in view that the program has already been gradually increasing its intake over the past 3-4 years without seeking EAB's approval, it is strongly suggested that EAB should ensure that the department MUST take immediate actions to address the concern and limit its annual in-take as would be prescribed by the EAB.

Prepared and submitted by Program Evaluation Team:

	Name	Signature
Team Convener	Engr. Prof. Dr. -----	
Evaluator1	Engr. Prof. Dr. -----	
Evaluator2	Engr. Dr. -----	
PEC Rep.	Engr. -----	