



## Pakistan Engineering Council Program Evaluation Guidelines for PEVs

- 1) For all accreditation criteria, the findings shall be recorded under 'Compliance' column as: 'Y' for satisfactory, 'C' for Concern, 'W' for Weakness, 'D' for Deficiency or 'OFI' for Opportunity for Improvement.
- 2) In case of 'C', 'W' or 'D', justification must be provided under '*Observation and Remarks*' column.

### Color Legend Used:

	Item marked with "Yellow" color means <b>Deficiency</b> for the main criteria
	Item marked with "Green" color means <b>Weakness</b> for the main criteria
	Item marked with "Gray" color means <b>Concern</b> for the main criteria

Sr. No.	Criteria	Observations and Remarks For Non-Compliance
	<b>Criterion-1: Program Educational Objectives (PEOs)</b>	
i	Well-defined and published Institute Vision and Mission	<b>D: Institute Vision and mission are not defined.</b> W: defined somehow but not published C: not very well published as public document
ii	PEOs are defined, consistent with the Vision / Mission, and well publicized.	<b>D: PEOs are not defined.</b> W: Reasonably defined but in total disregard to V&M C: 1) There are some issues with PEOs' consistency with Vision/Mission ;OR 2) The PEOs are too narrow or too broad; OR 3)Not very well published as public documents
iii	Involvement of stakeholders in formulation / review of PEOs.	<b>D: System does not have any mechanism for involvement of stakeholders</b> W: Process partially defined AND no formal evidence showing involvement of stakeholders so far C: informal involvement of stakeholders seen
iv	A process in place to evaluate the attainment of PEOs.	<b>D: No process defined</b> W: Process is defined but assessment tools/KPIs are non-existent C:1) Assessment tools/KPIs defined but are inadequate; OR 2) Evaluation mechanism and allocation of responsibilities of entities are not clear / confusing
v	Evaluation results used for continual improvement of the program	<b>D: CQI process at PEO level is not defined</b> W: 1) Assessment data gathered , but no analysis and evaluation carried out ; OR 2)Corrective actions based on evaluation results are not identified and no implementation plan worked out C: Corrective actions are not implemented OR only partially implemented.

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	<b>Criterion-2: Program Learning Outcomes (PLOs)</b>	
i	PLOs are well-defined and publicized.	<b>D: Not defined at all</b> W: Defined but not approved from the concerned Statutory Bodies; OR Not publicized C: Insufficient justification of fulfilment of graduate attributes.
ii	PLOs are appropriately linked to PEOs	<b>D: Not linked</b> W: Linked but not supportive to all PEOs C: Some key points in PEOs are not addressed in PLOs
iii	PLOs encompass all the required Graduate Attributes as defined in EAB Accreditation Manual	<b>D: Do not encompass the PEC GAs in totality</b> W: partially encompass C:
iv	Mapping of Courses to PLOs	<b>D: No mapping is given.</b> W: Mapping is there but all PLOs are not adequately supported. C: Mapping is not covering all domains of learning.
v	Teaching-learning and assessment methods appropriate and supportive to the attainment of PLOs	<b>D: Teaching/ assessment methods not appropriate/ designed to attainment of PLOs.</b> W: Partially supportive. C: Assessment methodologies both direct and indirect are not appropriately applied.
vi	Quality of assessment process to evaluate the attainment of PLOs at student as well as cohort levels through well-defined Key Performance Indicators (KPIs).	<b>D: KPIs are not defined.</b> <b>W: KPIs are not well defined or assessment is not carried out at the appropriate taxonomy level.</b> C: KPIs are well defined but not addressing student /cohort level.
vii	Process in place by which assessment results are applied to further refine the assessment mechanism and/or redefine the program outcomes, thus leading to continuous improvement of the program	<b>D: CQI process for PLOs is not defined.</b> W: 1) CQI process defined but not institutionalized; OR 2) No analysis carried out C: Evaluation done but no corrective actions taken.

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	<b>Criterion-3: Curriculum and Learning Process</b>	
i	Curriculum covers required breadth, depth and distribution of the program courses according to program specific (HEC/PEC NCRC curriculum) guidelines.	<p><b>D:</b> Curriculum deviates significantly from HEC/PEC curriculum guidelines or essential breadth and depth courses are missing from the curriculum</p> <p><b>W:</b> 1) The course files reveal that though the program does include the necessary Depth &amp; Breadth courses in its curriculum, but in actual practice, the coverage of Depth contents is very shallow; OR 2) Coverage of Design aspects / projects is relatively on the lower side.</p> <p><b>C:</b> Coverage in a few breadth courses is not adequate.</p>
ii	Curriculum provides balanced coverage of engineering and non-engineering contents in-line with National Engineering Qualifications Framework (NEQF)	<p><b>D:</b> Curriculum deviates significantly from NEQF;</p> <p><b>W:</b> Curriculum broadly conforms to NEQF but lacks certain important courses in more than one domains (i.e. Math, Natural Sciences, Humanities, Management, Engineering);</p> <p><b>C:</b> Curriculum broadly conforms to NEQF but lacks certain important courses in any one domain</p>
iii	Adequate exposure to Complex Engineering Problems (CEPs) and Activities	<p><b>D:</b> No exposure</p> <p><b>W:</b> 1) Limited exposure to CEPs in courses and labs; OR 2) Limited exposure to CEPs in FYPs.</p> <p><b>C:</b> Reasonable exposure in FYPs but not adequately covered in some courses/labs</p>
iv	Availability of program specific well equipped labs to supplement theoretical knowledge/class room learning.	<p><b>D:</b> Essential Labs are missing or seriously deficient in the required lab equipment.</p> <p><b>W:</b> Most of the labs are in place, some are deficient in equipment or numbers of workstations in most of the labs are less than reasonable considering the student strength.</p> <p><b>C:</b> All the required labs are there, a few have limited number of workstations hindering adequate hand-on exposure</p>
v	Lab work supporting the attainment of the required skills and its assessment mechanism	<p><b>D:</b> No assessment mechanism exists to measure lab skills. No concept of assessment in Psychomotor and Affective domains.</p> <p><b>W:</b> Students are offered limited hands-on opportunity to develop the required skills; assessment mechanism is mostly not appropriate.</p> <p><b>C:</b> 1) One or two labs lack the focus on developing relevant skills; OR 2) The assessment mechanism lacks rigor or appropriateness</p>
vi	CLOs defined for all courses with appropriate Learning-Levels, e.g. the ones defined in Bloom's Taxonomy, and their mapping to relevant PLOs	<p><b>D:</b> CLOs not defined for most of the courses.</p> <p><b>W:</b> CLOs not defined for some courses, inappropriate Taxonomy level and their mapping to relevant PLOs.</p> <p><b>C:</b> CLOs' action verbs not commensurate with taxonomy levels indicated, lacking clarity in mapping to PLOs.</p>
vii	Benchmarking of curriculum carried out with National / International best practices – Washington Accord (WA) recognized programs	<p><b>D:</b> NO benchmarking carried out</p> <p><b>W:</b> Benchmarking carried out but not in-line with best practices</p> <p><b>C:</b> Benchmarking carried out only at broad domain level but not at course level and/or no analysis done.</p>

viii	Formal involvement of industry in curriculum development / revision	<b>D: No involvement from industry</b> W: Process in place but not regularly practiced C: Informal industry involvement at departmental level.
ix	Employment of other aspects of student learning such as tutorial system and seminar / workshops, etc. to enhance student learning, in addition to regular classroom interaction and lab experimentation	<b>D: No employment of other aspects of student learning.</b> W: Formal mechanism is there but not practiced. C: Some other aspects of student learning are practiced.
x	Exposure to cooperative learning through supervised internship program with formal feedback from the employer	<b>D: No internship program in place.</b> W: Only limited Internships are arranged, no feedback mechanism is there C: Internships are arranged, with some feedback but no analysis for CQI
xi	Sufficient opportunities to invoke intuitiveness and originality of thought through Problem Based Learning (PBL), Design Projects and Open-Ended labs.	<b>D: No such opportunities exist</b> W: Few instructors practice PBL and/or give design projects in courses but not formalized by the department. C: The formalized use of Design projects, Open-Ended labs and PBL is there but limited in number.
xii	Assessment of various learning outcomes (PLOs/CLOs) employing appropriate direct / indirect methods.	<b>D: Inappropriate Assessment methods used for evaluation of CLOs/PLOs.</b> W: Assessment in Cognitive domain usually appropriate but at times lacks rigor; OR Lacks assessment in any other domain. C: Use of inappropriate rubrics for Psychomotor and Affective domains.

Sr. No.	Criteria	Observation and Remarks For Non-Compliance
	<b>Criterion-4: Students</b>	
i	Admission Criteria meets / exceeds minimum eligibility criteria prescribed by PEC Regulations.	<b>D: Not in compliance with PEC regulations.</b> Y: In Compliance
ii	Annual intake is in-line with the maximum intake allowed by EAB for the program.	<b>D: Not in compliance with PEC regulations.</b> Y: In Compliance
iii	Well documented policy on transfer of students only from other accredited program restricting transfer of less than 50% of Cr Hrs required for the degree.	<b>D: Students transferred from non-accredited programs; or student transfer allowed from accredited program but with more than 50% Cr. Hrs. transferred.</b> W: No documented transfer policy C: Policy in place but not strictly adhered to.
iv	Efforts made to provide off-class academic counseling such as through engaging RAs/TAs/GAs holding scheduled tutorials, problem solving sessions etc. Regular office hours announced by faculty is the minimum expectation.	<b>D: No regular office hours, and no efforts made to provide off-class counselling.</b> W: Office hours not announced and limited tutorials. C: Office hours announced but not fully observed.

v	Availability of designated student counselors to advise / counsel students regarding academic / career matters and provide assistance in managing their health, financial, stress, emotional and spiritual problems.	D: No provision of student counselling available. W: Limited provision of student counselling. C: Student counselling effective in limited areas.
vi	Manageable class-size (around 40-50 for theory classes) and lab groups (2-3 students per workstation for hands-on type experiments, larger groups may be manageable for demonstration type)	D: Unmanageable class size / lab groups. W: Poorly manageable class size /lab groups. C: Manageable class size/lab size but exceeding desired limits
vii	Manageable semester academic load (i.e. 15-18 Cr. Hrs)	D: Unmanageable semester academic load W: Poorly manageable semester academic load C: manageable semester academic load but exceeding desired limits
viii	Completion of courses as evident from course-files and through student feedback	D: Course files not maintained or majority course completion is less than 70% W: Course files partially maintained or majority course completion is less than 80% C: Course files maintained and few courses have less than 90% completed.
ix	Students' participation in national / international engineering exhibitions and / or competitions, and facilitation by program for such participations	D: No participation in any event. W: Limited participation C: Participation in national events but not in international events
x	Quality of process to evaluate student performance and suggest / take corrective measures	D: No process is in place W: Process outlined but never followed C: Assessment is carried out but limited corrective actions are taken

Sr. No.	Criteria	Observations and Remarks For Non-Compliance
	<b>Criterion-5: Faculty and Support Staff</b>	
i	Sufficient Faculty Strength for providing effective student-teacher interaction (student-teacher ratio should be as per PEC guidelines, i.e. better than 20:1)	D: student-teacher ratio 30+:1 W: student-teacher ratio 25-30:1 C: student-teacher ratio 20-25:1
ii	Balanced faculty having appropriate qualifications (min. postgraduate with a reasonable percentage holding PhD) to cover all areas of program curriculum	D: Less than 3 PhDs. W: Insufficient faculty in core areas of the program, C: faculty deficient in any one core area of the program

iii	Formal mechanism for faculty training and mentoring on pedagogical skills including OBE concepts and implementation methodologies.	D: No formal training W: Limited formal training not covering all areas. C: Formal training but not effective implementation
iv	Effectiveness of faculty development program to ensure their professional growth and retention.	D: No faculty development program W: Limited faculty development program C: FDP is in place but not effective for faculty retention/growth
v	Reasonable faculty workload (as per PEC guidelines) including facilitation to young faculty pursuing higher studies.	D: Unmanageable faculty workload W: Work is not distributed keeping faculty workload and no policies exist for facilitation to young faculty C: Faculty workload is balanced but no facilitation to young faculty for pursuing higher studies.
vi	Continuation of faculty research, publications and sponsored projects from industry/donor agencies, etc.	D: No faculty research/ publications/ sponsored project in recent years W: Limited faculty research/ publications/ sponsored project in recent years C: No funding from external donor agencies/industry
vii	The program should be headed by a PhD senior faculty in relevant discipline. Reasonable mix of Senior and Junior qualified faculty be ensured.	D: Program is not headed by a senior PhD W: The program is headed by an inexperienced PhD faculty or not from the relevant discipline. C: Majority of the faculty is young and inexperienced

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	<b>Criterion-6: Facilities and Infrastructure</b>	
i	Adequacy of teaching and learning facilities, e.g. classroom environment and availability of various teaching aids, etc.	D: Essential infrastructural facilities is very limited in relation to the student population W: 1) Infrastructural facilities are reasonable, but not adequately maintained; OR 2) Most of the facilities are adequate but some have capacity/adequacy issues; OR 3) There is very limited availability of teaching aids in the classrooms / laboratories OR C: 1) Teaching learning environment is not very conducive. 2) Teaching aids are available but quite limited in number and variety;
ii	Provision of program specific labs (as per curriculum), workshops, and associated lab equipment for complementing the class / theory work.	D: 1) The program does not have ALL the required labs for the program; OR 2) The labs are deficient in terms of availability of essential laboratory equipment. W: Fewer number of workstations/ equipment in the labs, thus hindering sufficient hands-on opportunity to the students; C: 1) Non-functional and/or very old equipment of limited use; OR 2) Generally congested lab spaces

		3) Most of the Labs being overly committed with very few free slots available for students to makeup for their missed lab sessions/experiments or to work on their own projects, space inadequate
iii	Adequacy of library resources and facilities.	<p><b>D:</b> 1) Too small of a Library (in terms of space, seating capacity, number of books etc.) with regard to the overall university population, unless complemented by a reasonably sized departmental library for the program students; OR</p> <p>2) No or very limited access to program related research Journals (hardcopy/online) and very limited and out of date program related as well as general books</p> <p><b>W:</b> 1) Congested Library Space with inadequate seating capacity; OR</p> <p>2) No or very limited printing/xeroxing facility; OR</p> <p>3) No internet connectivity and/or No computers for online access ; OR</p> <p>4) No Digital Library and e-books; OR</p> <p>5) Too few program specific technical books and/ Journals.</p> <p><b>C:</b> 1) Too few computers and/or very slow internet connectivity.</p> <p>2) Limited number and variety of latest Reference / Text books (i.e. published in last 5 years) for the program;</p>
iv	Provision of sufficient computing facilities and internet access / resources allocated for the program.	<p><b>D:</b> Rare computing facilities and no internet access for faculty / students</p> <p><b>W:</b> Limited computing and internet access</p> <p><b>C:</b> Limited internet access</p>
v	Provision and effectiveness of consulting and career placement services provided to the students	<p><b>D:</b> Does not exist</p> <p><b>W:</b> Exist but with very limited scope and resources.</p> <p><b>C:</b> Available but not efficient, rare contribution</p>
vi	Adequacy of support facilities such as hostels, sports and recreational centers, health care centers, student centers, and transport facilities	<p><b>D:</b> No concept/existence of any support facilities; neither is there any plan for acquiring these.</p> <p><b>W:</b> Inadequate facilities; planned for future but not yet approved.</p> <p><b>C:</b> Support facilities are available, some adequate and some inadequate; however, their provision / extension is planned and approved.</p>
vii	Adequacy of arrangements made / measures taken to ensure work-place safety (EHS concerns) in general, and while performing experiments in the labs. in particular	<p><b>D:</b> No awareness about safety, Highly unsafe environment, Not even basic fire-fighting equipment and/or emergency exits.</p> <p><b>W:</b> 1) Conscious about workplace safety and several safety measures in place. However, no formal policy/procedures for EHS documented;</p> <p>2) Very Weak safety measures inside / around laboratories.</p> <p><b>C:</b> 1) EHS concept/SOPs exist but occasionally / limited practiced. (No evidence)</p> <p>2) Safety measures available in labs but needs improvement and proper maintenance.</p>

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	<b>Criterion-7: Institutional Support and Financial Resources</b>	
i	Adequacy of institutional financial resources to ensure program's sustainability and meeting of recurring as well as developmental requirements.	<b>D: Unstable Institutional financial resources</b> <b>W: Hardly meeting recurring budgetary expenses AND NO / barely minimal developmental budgetary allocations / roadmap</b> C: Adequacy of financial resources for the recurring expense But Developmental budget for the program is not adequate / allocated
ii	Evidence of continued financial commitment in the form of increasing endowment and recurring /development budget since last accreditation visit.	<b>D: 1) Financial health in terms of Endowment fund, investments, etc. has gone down drastically as compared to that at the time of last accreditation visit; OR 2) Inadequate recurring/ development budget.</b> W: Financial health in terms of Endowment fund/, investments, etc. maintained but inadequate recurring/ development budget. C: No improvement in financial health in terms of increased Endowment fund, investments, etc.
iii	Provision of funding for R&D pursuits and presentations/publication of research papers	<b>D: No provision of funding</b> W: Inadequate Funding, and that too mostly not utilized because of no motivations / encouragement for Publications and Research projects C: Some funding for R&D pursuits and publications (in the last 2-3 years)

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	<b>Criterion-8: Continuous Quality Improvement (CQI)</b>	
i	CQI process is well documented and institutionalized at all levels (CLOs, PLOs and PEOs).	<b>D: CQI process / mechanism is not in place</b> <b>W: CQI is defined and institutionalized but not practiced.</b> C: CQI is well documented, institutionalized and practiced at all levels, but some of the corrective actions are not taken.
ii	Actions taken / implementation plans worked out to address the concerns/weaknesses identified in the last accreditation visit report.	<b>D: No actions are taken and no implementation plans are made.</b> W: Only partial actions are taken (less than 50%) and/or unsatisfactory implementation plans are made. C: The major actions are taken (more than 50% but less than 75%) and somewhat satisfactory implementation plans are made.
iii	Improvement in Faculty Strength / Qualifications since last accreditation visit	<b>D: Only partial improvement (less than 50%) in Faculty Strength/Qualifications, if required.</b> W: Somewhat improvement (more than 50% but less than 75%) in Faculty Strength/Qualifications since last accreditation visit. C: Significant improvement (more than 75% but less than 90%) in Faculty Strength/Qualifications since last accreditation visit.



iv	Improvement in Student-Teacher Ratio since last accreditation visit	D: Only partial improvement (less than 25%) in Student-Teacher Ratio, if required. W: Somewhat improvement (more than 25% but less than 50%) in Student-Teacher Ratio since last accreditation visit. C: Significant improvement (more than 50%) in Student-Teacher Ratio since last accreditation visit.
v	Continuation of Faculty Publications, R&D and Consultancy activities	D: No publications / R&D /Consultancy projects since last visit W: Limited research publications / R&D / consultancy activities. C: Lack of Journal publications and /or funded R&D / consultancy activities.
vi	Addition of any new facilities, i.e. infrastructure, lab equipment, teaching aids, etc. to assist in the attainment of program objectives / outcomes, since last accreditation visit	D: No addition of new facilities. W: Limited addition of new facilities. C: Some addition of new facilities , yet the specific
vii	New initiative(s) taken since last accreditation visit (including but not limited to OBE implementation, content delivery, assessment and evaluation processes, etc.)	D: No new initiatives taken. W: No significant new initiatives taken. C: Few significant new initiatives taken.

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	<b>Criterion-9: Industrial Linkages</b>	
i	Existence of active Industrial Advisory Board/Committee	D: No Industrial Advisory Board exists. W: Industrial Advisory Board exists but is inactive. C: Meets irregularly.
ii	Formal mechanism for seeking feedback from Industry and its analysis for the attainment of PEOs	D: No formal mechanism in place. W: The formal mechanism is in place but the assessment tools / methods do not correlate with the PEOs. C: The formal mechanism exists and its assessment tools / methods also correlates with the PEOs; however, effective analysis not periodically performed.
iii	Opportunities for students to acquire industrial experience via internship and existence of Industry-Liaison office	D: No dedicated Industry-Liaison office exists. W: A dedicated Industry-Liaison office exists, but plays no role in arranging internships. C: A dedicated Industry-Liaison office exists, but its effectiveness is limited.
iv	Design projects sponsored / supervised jointly by Industry Professionals and faculty members	D: No sponsored design projects and no joint supervision. W: No sponsored design projects but limited joint supervision. C: Industrial linkages exist but limited sponsored design projects.
v	Faculty members involved in design / supervision / consultancy role with the industry in the execution of industrial projects	D: No faculty involvement with industry, and no policy exists. W: Irregular and Limited faculty involvement with industry. C: Regular but limited faculty involvement with industry.