Executive Summary
BS in Computer Science (BSCS)
Cycle: IV (2024–25)

Transitioning to PREE: The BSCS Program's Assessment Milestone

The Department of Computer Science completed its fourth self-assessment (SA) cycle for the BSCS program—its first review under HEC's newly introduced Program Review for Effectiveness & Enhancement (PREE) framework. This marked a significant milestone, as the department embraced a model that goes beyond compliance and emphasizes effectiveness, enhancement, and continuous improvement. Despite being in its pilot phase of the PREE framework, SA demonstrated VU's strong commitment to quality assurance and alignment with evolving national standards. The PREE framework provided a fresh lens for evaluating academic programs, focusing on how well the program delivers its intended outcomes and how it can be strengthened for the future. For this review, the evaluation panel applied rubric-based scoring—developed by the Directorate of Quality Enhancement (DQE)—to ensure objectivity in interpreting the judgment criteria, even though HEC's official judgment guidelines were unavailable. The assessment concluded with the program being rated "Approved with Recommendations", achieving a normalized rubric score of 72.27 out of 90 (~80.3%), as specific standards did not apply to this program.

PREE Implementation: Process Overview

The review process unfolded in several structured stages, each reinforcing the PREE framework's emphasis on evidence-based evaluation and enhancement:

- **Initiating the Process:** The chairman of the Institutional Quality Circle (IQC) initiated the cycle by granting anticipatory approval, after which the Program Team (PT) and Assessment Team (AT) (see Table 1) were formally notified and oriented.

- **Data Collection & SAR Development:** The PT prepared a Self-Assessment Report (SAR) addressing PREE's eight standards outlined as Expected Outcome Indicators (EOIs). This report is based on surveys, data analytics, and stakeholder feedback gathered by DQE to provide an evidence-based overview of the program's performance.

- **Panel Review and PREE Judgement:** An AT was thoughtfully constituted to ensure a well-rounded evaluation. It incorporated not only a senior faculty member from the department but also an interdepartmental faculty representative and an external expert, bringing broader perspectives and impartial insights into the process. The AT critically evaluated the SAR during an exit meeting. Using a rubric calculator, the panel translated qualitative judgments into an

objective numeric score, resulting in a panel judgment of **"Approved with Recommendations,"** ensuring consistency in applying the PREE judgment criteria.

- **Continuous Quality Improvement (CQI):** The outcome of the Self-PREE has triggered a CQI cycle by pinpointing critical areas that require enhancement and providing constructive suggestions for targeted improvements. In response, the department head will initiate an implementation plan to address these findings directly. The DQE will oversee the execution of this plan, ensuring that recommendations are translated into measurable progress and continuous program development.

Table 1: Program & Assessment Teams

Members' Name	Designation	Affiliation	Role
Program Team			
Dr. Arif Husen	Lecturer	Computer Science, VU	PT Lead
Mr. Waqas Ahmad	Tutor	Computer Science, VU	PT Member
Mr. Faizan Tahir	Tutor	Computer Science, VU	PT Member
Dr. Mubashar Majeed Qadri	Manager		QA Coordinator
Assessment Team			
Dr. Rabeeh Ayaz Abbasi	Professor	QAU, Lahore	AT Lead (External)
Dr. Israr-ullah	Associate Professor	Computer Science, VU	AT Member (Internal)
Dr Muhammad Umar Shahzad	Assistant Professor	Management Science, VU	AT Member (Internal)

PREE Quality Standards & Implementation

The PT developed the SAR according to the eight (8) PREE criteria:

Standard	Title	Implementation
1	Program Mission, Objectives, & Outcomes	These five standards are specific to the program. All related content is recorded in SAR, and AT evaluates these standards.
2	Curriculum Design and Organization	
3	Laboratory and Computing Facility	
4	Student Support and Advising	
5	Teaching Faculty / Staff	
6	Institutional Policies & Process Control	This standard was not individually reviewed for this program, as these policies are centralized and uniformly applied across all programs.
7	Institutional Support & Facilities	This standard is partially addressed in the first five standards and partially in the RIPE (Review of Institutional Performance and Enhancement) process.
8	Institutional General Requirements	This standard applies only to graduate programs, while the program under review is at the undergraduate level.

DQE Role and Support

The DQE was pivotal in facilitating the review by providing the PT with all essential resources, including reference documents, raw data from graduating students, alums, faculty satisfaction surveys, and program enrollment and performance statistics. A critical evaluation exit meeting was convened at the Lawrence Road Office (LRO), bringing together the AT and PT, the HOD, and DQE representatives to discuss findings and clarify observations. Following this review, the AT submitted its rubric-based evaluation and detailed report to the DQE. These findings were formally shared with HOD to guide the preparation of an Implementation Plan, forming the basis for targeted improvements under the CQI cycle.

Key SAR's Findings Snapshot:

Standard	AT Score	Major Strengths
1	11 / 15	• PEOs reflect subject knowledge, skills, and attributes and align well with the University Mission. • The program outcomes are measurable and are appropriately aligned with the PEOs. • A fair and transparent assessment model at the course level is in practice.
2	18 / 20	• Curriculum is adequately aligned with the new undergraduate policy. • comprehensive coverage of CS core areas.
3	12 / 15	• Adequate LMS and ICT resources; virtual lab support
4	9 / 10	• An online student advising mechanism is in place. • Career orientation webinars are arranged occasionally.
5	14 / 20	• Qualified faculty with strong academic credentials • Positive faculty feedback.
6	8 / 10	• All the academic-related processes are digitized. • Admission dashboard available. • Student progress and credentials can be tracked digitally.
7	N/A	N/A
8	N/A	N/A

Thematic Observations & Recommendations:

Program Alignment and Outcome-Focused Curriculum

The BSCS program demonstrates strong alignment between its Program Educational Objectives (PEOs), Program Learning Outcomes (PLOs), and the Virtual University's overarching mission. The curriculum adequately integrates contemporary content and is designed to equip graduates with the knowledge and skills required to thrive in the ICT sector. This synergy between institutional priorities and curricular delivery reflects a well-thought-out foundation supporting academic standards and market expectations. The panel acknowledged that the program is directionally sound and responsive to evolving higher education and industry needs.

While these elements already exist in practice, they require greater structure and enhancement to maximize their impact. Specifically, the panel recommended:

- Incorporate a strategic plan to measure the program outcomes, incorporating student performances against program learning outcomes at graduation and tracing students' career paths and successes.
- Expand the recognition of the program through national and international accreditation.
- Enhancing industry linkages by evolving current informal practices into systematic employer satisfaction surveys and regular feedback mechanisms to ensure continuous alignment with market trends.
- Expanding opportunities for hands-on engagement by building existing virtual practices to incorporate hybrid labs and periodic in-person sessions that strengthen practical learning.

Learning Environment, Resources, and Infrastructure

The program benefits from a robust virtual learning environment supported by a well-functioning Learning Management System (LMS) and ICT resources that facilitate flexible and accessible education for students across diverse locations. The availability of virtual labs provides students with essential exposure to practical components, ensuring that laboratory-based learning outcomes are partially achieved even in a fully online setting.

Nonetheless, the review highlighted several opportunities to strengthen the learning environment and support infrastructure, including:

- Upgrade the virtual lab environment by enhancing current infrastructure with stronger monitoring and management practices, ensuring greater integrity, interactivity, and effectiveness of practical learning experiences.
- Incorporate emerging technologies, especially generative AI, to enhance the pedagogy for improved program outcomes.
- Refresh and modernize multimedia learning content by systematically upgrading materials to new formats, improving accessibility, user engagement, and alignment with evolving standards in online education.

Student Support, Engagement, and Professional Development

The program has developed online advising mechanisms and organizes career-focused webinars, contributing to student awareness and professional readiness. The LMS also supports consistent communication between students and faculty, ensuring learners can access academic guidance. However, there are areas where student support and engagement can be further enhanced.

- Broaden the current advising framework by integrating dedicated counselling services holistically addressing academic guidance, career planning, health and well-being, and personal development needs.
- Deepen industry collaboration by building existing linkages to create more internship opportunities, mentoring, and meaningful real-world exposure.
- Advance student engagement and involvement by moving beyond traditional feedback mechanisms toward active participation models (e.g., student representation in quality circles, peer-led initiatives, and collaborative decision-making forums). This approach will strengthen the sense of ownership, align with PREE's focus on meaningful learner involvement, and foster a culture where students actively contribute to shaping their learning experience and program development.

Faculty Capacity and Scholarly Environment

The program is supported by qualified faculty who contribute positively to teaching quality and curriculum delivery. Their expertise underpins the program's ability to meet academic expectations and provide a sound learning experience for students.

To further strengthen this area, the panel identified opportunities for improvement, such as:
- Strengthen existing workload management practices to create a balanced distribution that allows faculty to contribute to teaching excellence and scholarly activities.
- Enhance faculty development and research culture by expanding structured incentives, targeted training programs, and institutional support mechanisms that encourage research publications and the pursuit of higher academic qualifications.

Governance, Quality Processes, and Continuous Improvement

The BSCS program operates under transparent governance structures and leverages LMS-based dashboards to monitor academic and administrative processes, ensuring consistency and accountability in program delivery. The Self-PREE process further demonstrated the program's

commitment to quality by using surveys, data analysis, and stakeholder feedback to identify gaps and initiate enhancements. DQE has supported these efforts through data provision, guidance, and oversight.

While these mechanisms are already in place, the panel emphasized the need to strengthen and integrate them further to foster a robust culture of continuous improvement. Recommended enhancements include:

- Expanding the use of KPI dashboards to provide deeper insights, analyze trends, and support data-informed decision-making.
- Refining complaints and query handling procedures to make them more transparent and time-bound. Evaluate for continuous improvement.
- Update the existing instructor-reflection and student course-evaluation forms into a Course-Analytics Framework, pairing data-driven instructor diagnostics with CLO-linked student feedback to yield actionable evidence for targeted course content and teaching improvements.
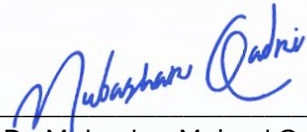
Conclusion

The BSCS program's self-PREE marked a significant step in adopting HEC's new quality framework. Through this first cycle under PREE, the department demonstrated its commitment to evidence-based self-evaluation and using the findings as a foundation for improvement. The process successfully identified program strengths, collected stakeholder feedback, and highlighted areas requiring targeted interventions.

Overall, the program exhibits strong foundations in its curriculum design, teaching quality, and virtual learning infrastructure. At the same time, the review revealed critical gaps in strategic planning, industry engagement, and data-informed quality assurance that must be addressed to unlock its full enhancement potential. Implementing KPI dashboards and formalizing continuous improvement mechanisms will be essential to embedding PREE's philosophy of ongoing enhancement into program operations.

The DQE will continue to provide oversight and guidance, monitoring the execution of the implementation plan during the upcoming academic cycle. This ongoing collaboration will ensure the program addresses current recommendations and cultivates a sustainable culture of continuous quality improvement that aligns with PREE's objectives.

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