Executive Summary
Program: BS Bioinformatics
Cycle: IV (2025–26)

Transitioning to PREE: The BS Bioinformatics Program's Assessment Milestone

The BS Bioinformatics program underwent its first evaluation under the Higher Education Commission's (HEC) Program Review for Effectiveness and Enhancement (PREE) framework following the completion of the program's fourth self-assessment cycle. This review represents an important milestone in the University's transition from compliance-oriented quality assurance towards an evidence-based framework that emphasizes program effectiveness, educational outcomes, and continuous quality improvement. As part of the University's implementation of the newly introduced PREE framework, the program was evaluated using the customized PREE Workbook developed by the Directorate of Quality Enhancement (DQE), which provides a structured, outcome-based approach to documenting evidence and assessing program performance. Based on the evidence presented and the Assessment Team's evaluation, the program was rated "Approved with Recommendations", achieving a normalized score of 84.64 out of 95 (approximately 89%), reflecting a sound institutional foundation while identifying opportunities for further strengthening program-level quality assurance and continuous improvement.

PREE Implementation: Process Overview

The review process followed a structured series of stages designed to ensure consistency, transparency, and evidence-based evaluation in accordance with the PREE framework.

- **Initiation of the Review:** The Chairman of the Institutional Quality Circle (IQC) initiated the review cycle by granting anticipatory approval, following which the Program Team (PT) and Assessment Team (AT) (Table 2) were formally constituted and oriented regarding their respective roles and responsibilities.
- **Transformation to an Outcome-Based PREE Workbook:** To support the implementation of the revised PREE framework, the DQE replaced the conventional narrative Self-Assessment Report (SAR) MS Word format with a structured PREE Workbook. The workbook comprises dedicated worksheets for each quality standard, enabling systematic documentation of evidence, assessment against Expected Outcome Indicators (EOIs), improved traceability, and greater consistency in program evaluation.
- **Evidence Collection and Coordination:** Under the new PREE implementation model, the PT's role was reshaped to act mainly as the departmental contact for program-specific information and evidence validation. The designated Quality Manager (QM) from DQE took charge of coordinating evidence collection, working with relevant academic and non-

academic departments, and preparing the PREE Report in close partnership with the PT and departmental focal persons. Evidence collection was centrally managed by the assigned QMs using the institutional data repositories maintained by the QA Officers of DQE.

- **Standard-Based Quality Management:** Rather than assigning an individual QM to a single program, each QM was assigned responsibility for one or two quality standards (Table 1). This approach enabled the development of expertise in standards, promoted consistent interpretation of the PREE framework, and ensured uniform assessment practices across the University. Each QM prepared the assigned sections of the PREE Report in close coordination with the respective PT for program-specific information and validation.

Table 1: Standards Allocation to QMs

Members' Name	Designation	Allocated Standard
Dr. Mubashar Majeed Qadri	Manager Quality	Standard – 1
Ms. Irfana Aalam Ghouri	Manager Quality	Standard – 2, 7
Mr. Muhammad Azeem	Manager Quality	Standard – 3, 4
Mr. Mehboob Ahmed Khartri	Manager Quality	Standard – 5, 6
Syed Naveed Anwer	Quality Assurance Officer	Coordination & Data Compilation

- **Evidence Validation and Report Finalization:** The report was developed using institutional performance data, stakeholder surveys, learning analytics, and supporting documentation to provide a comprehensive overview of program performance. The PREE Report draft was finalized by the assigned QM and then reviewed by the PT to verify its completeness, accuracy, and consistency with the documented evidence. The validated report was then finalized and submitted to the AT for independent evaluation.
- **Panel Review and PREE Judgment:** The AT, comprising a senior faculty representative from the department and an external academic quality expert, independently reviewed the submitted evidence and evaluated the program against the HEC PREE framework. Complementing the AT's review, an independent QA Expert separately evaluated the PREE Report and the new outcome-based PREE Workbook before participating in a joint review session with the DQE and the Head of Department (HoD). The assessment employed the rubric-based evaluation methodology to promote consistency, transparency, and objectivity in applying the PREE judgment criteria. Based on its evaluation, the AT assigned the program an overall judgment of **"Approved with Conditions."**
- **Continuous Quality Improvement (CQI):** The completion of the assessment initiated the program's Continuous Quality Improvement (CQI) cycle. The findings and recommendations presented in this report provide the basis for identifying improvement priorities and developing a structured implementation plan. The implementation plan was prepared by the

DQE in consultation with the relevant department and will be monitored through the University's quality assurance processes to support continuous program enhancement before the next review cycle.

Table 2: Program & Assessment Teams

Members' Name	Designation	Team	Affiliation	Role
Ms. Saddia Bano	Lecturer	PT	Biological Science, VU	Focal Person
Hafiza Moatter Bahar	Tutor/Instructor	PT	Biological Science, VU	Member
Dr. Muhammad Tariq Pervez	Associate Professor	AT	Biological Sciences, VU	Lead (Internal)
Dr. Waseem Haider	Associate Professor	AT	Comsats University, Islamabad	Member (External)

Program Review and Exit Meeting

A critical evaluation exit meeting was convened at the Lawrence Road Office (LRO) on July 7, 2026, bringing together the AT and PT, the HOD (Prof. Dr. Muhammad Asif Nadeem, Professor), and DQE representatives, including the Director and all other QMs and QA officers, 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, which served as the basis for targeted improvements under the CQI cycle.

Panel's Findings Snapshot:

Standard	AT Score	Major Strengths
1	11.25 / 15	• The program is supported by a robust governance framework, documented policies, and structured management processes that ensure QA. • The University has strong teaching, assessment, and QA systems, supported by a mature LMS and centralized processes. • Availability of extensive and reliable institutional data to facilitate evidence-based evaluation and continuous quality enhancement.
2	20 / 20	• Curriculum is adequately aligned with the new undergraduate policy. • comprehensive coverage of core areas.
3	8.06/10	• Practical learning is facilitated using the LMS, software tools, manuals, videos, digital resources. • Access to on-campus computer laboratories.
4	13.75 / 15	• Systematic module planning and delivery. • Resilient digital learning infrastructure. • Strong documentation of Academic Regulations and student information.
5	17 / 20	• Qualified faculty with strong academic credentials • Positive faculty feedback.
6	10 / 10	• All the academic-related processes are digitized. • Admission dashboard available. • Student progress and credentials can be tracked digitally.
7	4.58/5	• A robust virtual learning environment supported by an effective LMS and ICT infrastructure • Systematic LMS-based monitoring of student participation and performance.
8	N/A	N/A

Innovation in PREE Implementation

AT acknowledged that the transition from the traditional narrative SAR to the structured PREE Workbook represents a notable enhancement in quality review practices. The outcome-based workbook improves the organization of evidence, strengthens transparency in assessment, facilitates systematic evaluation against each EOI, and promotes greater consistency in program reviews across academic offerings.

Thematic Observations & Recommendations:

Governance, Mission Alignment, and Strategic Planning

The program operates within a well-established institutional governance framework supported by documented academic policies and approved Program Educational Objectives (PEOs). Centralized academic management processes provide a sound foundation for program planning, curriculum delivery, and quality assurance. Established mechanisms for curriculum oversight, academic coordination, and stakeholder engagement further support the University's capacity to deliver quality education within the Open and Distance Learning environment.

At the same time, the assessment indicates that academic planning, monitoring, and decision-making are largely focused at the course level, while program-level governance mechanisms require further strengthening. The program-level QA framework also needs further development, particularly with regard to explicit alignment of the institutional mission with PEOs, systematic measurement of PEO attainment, program-specific strategic planning, and documented use of program performance evidence for continuous improvement. In this regard, the panel recommended:

- Transition from a predominantly course-centric approach to a program-centric QA model.
- Strengthen departmental governance by establishing standing committees to oversee program planning, monitoring, and enhancement.
- Develop program-level strategic objectives, performance indicators, and targets.
- Strengthen cross-departmental coordination, workforce planning, and evidence-informed policy review to support sustainable program governance and continuous improvement.
- Strengthen evidence-informed governance by systematically incorporating institutional performance data, stakeholder feedback, and review outcomes into strategic planning, policy refinement, and academic development initiatives.

Outcome-Based Assessment and Continuous Quality Improvement

The University has established comprehensive teaching, learning, and assessment mechanisms supported by a mature LMS, standardized assessment procedures, diverse assessment tools, and extensive institutional data. These established systems provide a strong basis for monitoring academic performance and supporting evidence-based program evaluation.

The assessment, however, indicates that current assessment practices are primarily course-oriented, with limited evidence of systematic aggregation of Course Learning Outcome (CLO) results into Program Learning Outcome (PLO) attainment. Further strengthening is also required in program-level assessment reporting and in demonstrating how assessment findings are systematically translated into evidence-based academic improvement and continuous quality enhancement.

The panel, therefore, recommends that the University:

- Enhance and institutionalize an integrated outcomes assessment framework that systematically measures, monitors, and reports the attainment of CLOs, PLOs, and PEOs using both direct and indirect assessment methods.
- Establish comprehensive program-level assessment reports that consolidate evidence from multiple assessment sources and provide meaningful analysis to support evidence-based academic decision-making.
- Institutionalize periodic program self-evaluation and internal quality reviews by integrating assessment findings into Continuous Quality Improvement (CQI), strategic planning, and program governance, while systematically monitoring the implementation and effectiveness of improvement initiatives.
- Strengthen Outcome-Based Education (OBE) implementation by ensuring constructive alignment among curriculum design, course development, teaching, learning, and assessment processes to enhance the achievement of intended learning outcomes.

Program Performance, Stakeholder Engagement, and Future Development

The program is supported by comprehensive institutional information systems, reliable administrative processes, established stakeholder feedback mechanisms, qualified faculty, and resilient digital infrastructure. Collectively, these strengths provide a sound platform for effective program delivery, evidence-based planning, and future academic development.

Nevertheless, the assessment indicates that program-level performance monitoring and long-term development planning require further strengthening. Although institutional data are available, their systematic translation into program-specific performance intelligence, longitudinal analysis, employer feedback, research impact assessment, and strategic development planning remains limited. Strengthening these areas would support more evidence-informed decision-making and the sustained development of the program.

The panel, therefore, recommends that the University:

- Strengthen program performance monitoring through longitudinal analysis of admissions, student progression, graduation outcomes, and institutional performance indicators to support evidence-based strategic planning.

- Establish a comprehensive program performance management framework supported by key performance indicators and their longitudinal analysis to enable evidence-based decision-making and strategic planning.
- Strengthen stakeholder engagement and graduate employability by institutionalizing employer feedback, alumni engagement, and structured industry partnerships to enhance program relevance and graduate readiness.
- Develop program-specific performance measures for research, innovation, community engagement, and societal impact to systematically evaluate their contribution to program effectiveness, curriculum enhancement, and institutional priorities.
- Develop a long-term Program Development Roadmap aligned with future academic priorities and accreditation readiness.
- Integrate program performance evidence into strategic planning and quality enhancement by systematically using performance data to monitor progress, evaluate program effectiveness, and inform future program development.

Student Engagement, Support, and Professional Development

The University has established multiple mechanisms for obtaining student feedback through course evaluations, online communication platforms, and stakeholder surveys, reflecting its commitment to understanding and responding to students' academic experiences. The inclusion of student representation in the Institutional Quality Circle (IQC) further demonstrates institutional recognition of student participation in quality assurance.

In addition, students have access to multiple support channels through which they can obtain academic guidance when required. However, the assessment indicates that student engagement remains largely consultative and has yet to develop into systematic participation in academic quality assurance and decision-making in line with the HEC PREE framework. Further strengthening is required in areas such as student representation on academic committees, structured participation in program review, transparent selection of student representatives, orientation and capacity building, and systematic communication of actions taken in response to student feedback.

The panel, therefore, recommends that the University:

- Institutionalize meaningful student participation in academic governance and quality assurance by operationalizing the framework for student representation.
- Enhancing mechanisms’ effectiveness for communicating academic decisions and improvement actions arising from student engagement and feedback.

- Strengthen the University's learner support framework by integrating academic advising, counseling, career guidance, and personal development services into a coordinated student success model that supports progression, retention, and graduate readiness.
- Enhance student-centered QA by expanding existing feedback mechanisms to systematically evaluate the effectiveness of academic delivery, advising, counseling, student–staff interaction, professional engagement, and other support services, and by using the findings to inform continuous program enhancement.

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 enable flexible and accessible learning for students across diverse locations. Student participation in learning activities is systematically captured through the LMS, providing a strong technological basis for monitoring engagement and academic performance.

The assessment nevertheless identified opportunities to further strengthen the learning environment and supporting infrastructure, particularly through the adoption of emerging educational technologies, modernization of digital learning resources, and more systematic governance and evaluation of the digital learning ecosystem. These measures would help maintain the adequacy, reliability, security, accessibility, and academic relevance of the University's digital learning provisions.

- Promote innovation in digital teaching and learning by integrating emerging educational technologies, including generative AI, and modernizing multimedia learning resources to enhance accessibility, learner engagement, and achievement of program outcomes.
- Strengthen governance of the digital learning ecosystem through periodic review, modernization, and independent evaluation of LMS, course production, examination systems, ICT infrastructure, and learner support services to ensure their adequacy, reliability, security, and alignment with evolving academic and technological requirements.
- Consolidate the documentation, standardization, and periodic review of practical and laboratory provisions by formalizing baseline specifications & curriculum–practical mapping, standardizing practical instructional resources & SOPs, and establishing systematic benchmarking, cross-campus conformity, and maintenance review mechanisms.

Faculty Capacity and Scholarly Environment

The program is supported by qualified faculty members whose expertise contributes to effective teaching, curriculum delivery, and the maintenance of academic standards. The assessment also

identified opportunities to further strengthen faculty capacity through systematic monitoring of qualifications, program-level staffing requirements, workload distribution, professional development, and faculty motivation.

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.
- Strengthen faculty recognition, career progression, research support, and reward systems while systematically analyzing and acting upon faculty feedback to improve faculty satisfaction, motivation, and retention.
- Develop structured Faculty Development Plans based on institutional needs assessments, periodically evaluate their effectiveness using measurable performance indicators, and systematically utilize evaluation findings to strengthen program-level quality improvement.

QA Expert's Judgment: Advancing Quality Maturity through Outcome-Based Self-Assessment

Mr. Yousaf Jamil, the QA expert and Director of QEC at Shifa Tameer-e-Millat University (STMU), Islamabad, recognized the effective transformation of the HEC QA Framework into a structured, outcome-based QA Framework, backed by detailed documentary evidence, clear institutional procedures, and a strong evidence repository. This transition from the conventional narrative SAR to the outcome-based PREE Workbook was appreciated as a significant institutional innovation that has strengthened EOI evaluation, traceability, transparency, and consistency in program review.

Using Quality Functional Levels, a key feature of the new QA framework, the expert observed that the current PREE Report predominantly demonstrates achievement of the initial quality levels (Document, Align, and Implement) through documented policies, established processes, and supporting evidence. The review further highlighted the opportunity to advance the QA maturity by strengthening the next levels (Analyze, Improve, and Evaluate). Future program reviews should place greater emphasis on interpreting evidence, analyzing trends, demonstrating how assessment findings inform program enhancement, and evaluating the effectiveness of rectification plans. The expert recognized the transition to an outcome-based QA framework as a significant institutional advancement, enabling a shift from a compliance-oriented approach to an evidence-based enhancement framework that triggers built-in quality improvement interventions.

Strategic Recommendations

- Strengthen future PREE Reports by establishing clear linkages between evidence, findings, conclusions, improvement actions, and measurable outcomes.

- Enhance the use of trend analysis, longitudinal performance data, and outcome assessment to demonstrate program effectiveness and the impact of Continuous Quality Improvement (CQI) initiatives.
- Shift the focus of self-assessment beyond compliance documentation toward systematic analysis of evidence, evaluation of effectiveness, and demonstration of the impact and outcomes of quality improvement initiatives.

Conclusion

The panel concludes that the BS Bioinformatics program is supported by a well-established institutional infrastructure, effective academic governance arrangements, comprehensive operational systems, and a strong institutional commitment to quality assurance within the ODL environment. These strengths provide a solid platform for sustaining program quality and supporting future development. Addressing the strategic recommendations will enhance the program's effectiveness, improve its readiness for future accreditation and external quality reviews, and further align institutional practices with the expectations of the HEC PREE framework.

Overall, the panel recognizes the University's commitment to quality enhancement and is confident that continued institutional efforts to achieve program-level quality maturity will further strengthen academic excellence, stakeholder confidence, and the program's long-term sustainability.

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