Virtual University of Pakistan

Assessment Team Report

Department: Biological Siences

Program Title: BS in Bitechnology

Assessment Cycle: Cycle-IV

Assessment Year: 2024-25

Criteria Referenced Evaluation

#	Standards' Title	Weightage	Approved	Approved with Recommendations	Approved with Conditions	Not Approved	Score
Standard-1	Programme Mission, Objectives & Outcomes	15%			✓		9.67
Standard-2	Curriculum Design & Organization	20%		✓			17.00
Standard-3	Subject-Specific Facilities	15%	✓				14.40
Standard-4	Student Support & Advising	10%		✓			8.00
Standard-5	Teaching Faculty/Staff	20%			✓		11.50
Standard-6	Institutional Policies & Process Control	10%		✓			8.77
Standard-7	Institutional Support & Facilities	5%					NA
Standard-8	Institutional General Requirements	5%					NA

Signature of Assessment Team Lead:
Name |Dr. Muhammad Zubair Yousaf
Designation | Professor
Professor KAM-School of Life Sciences **Forman Christian College** (A Chartered University)

Signagure of DQE Coordinator:
Name | Mr. Muhammad Azeem
Designation | Manager Quality Assurance

Standard-1 Programme Mission, Objectives & Outcomes						Weight = 0.15
Factors Score		NA	5	4	3	2	1

		NA	5	4	3	2	1
1	Institution and department mission statements are documented and aligned with the Programme Educational Objectives (PEOs).	☐	☐	☐	☑	☐	☐
2	PEOs define expected graduate achievements a few years after graduation, supported by a strategic plan outlining necessary actions.	☐	☐	☐	☐	☑	☐
3	Every PEO includes evidence of its alignment with institutional mission, assessment strategies and timelines, along with documentation of implemented improvements.	☐	☐	☐	☐	☑	☐
4	Programme Learning Outcomes (PLOs) are aligned with the PEOs and use of action verbs support their attainment.	☐	☐	☑	☐	☐	☐
5	The extent to which graduates achieve PLOs is assessed using defined methods such as alumni, graduating student, and employer surveys.	☐	☐	☐	☑	☐	☐
6	Survey data are collected systematically, analyzed, and presented in the report, with documented use of results for timely program improvements.	☐	☐	☐	☑	☐	☐
7	Accreditation outcomes and feedback are documented, with corresponding actions taken and planned improvements clearly described.	⃠	☐	☐	☐	☐	☐
8	The program's strengths, weaknesses, and major future development plans are identified and supported by evidence.	☐	☐	☑	☐	☐	☐
9	The department conducts periodic performance reviews using quantifiable measures to inform strategic decisions and continuous improvement.	☐	☐	☑	☐	☐	☐
10	Students are actively engaged in program evaluation, with documented evidence of their participation and feedback impact.	☐	☐	☑	☐	☐	☐
	Total Encircled Value (TV)	1	0	16	9	4	0
	Score 1 (S1) = [TV/(No. of Questions *5)] *100 *Weight =	9.67					

Standard-1 Programme Mission, Objectives & Outcomes

	Comments/Observations/Key Findings:		Recommendations/Conditions
1	Some updates are needed that has been mentioned in recommmendations	1	Revise Program Educational Objectives (PEOs) and Program Learning Outcomes (PLOs) and get the formal approval from the Board of Studies (BOS). Also the alignment of PEOs with the mission of the university.
2	The program does not have an explicitly documented strategic plan for achieving its stated objectives at the moment.	2	Develop a formal strategic plan for the measurement of PEOs with timelines, KPIs, and stakeholder feedback.
3	The employer survey has not been conducted.	3	Employer surveys should be conducted periodically to validate graduate performance.
4	The quantitative alignment of courses against the PLOs and competencies, is the effort of an individual team member.	4	The quantitative alignment of courses with PLOs and competencies provided in the report, should be reviewed by a Departmental Review Committee for program improvement.
5	The analysis of periodic student performance data is the output of an individual team member.	5	The analysis of student performance data provided in the report, should be reviewed by a Departmental Review Committee for informed decision making and program improvement.
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Standard-2 Curriculum Design & Organization		NA	5	4	3	2	1
Factors Score		**NA**	**5**	**4**	**3**	**2**	**1**
1	The curriculum is consistent and support the programme's documented objectives.	☐	☑	☐	☐	☐	☐
2	Theoretical background, problem analysis and solution are stressed within the programme's core material.	☐	☑	☐	☐	☐	☐
3	The curriculum satisfies the core requirements for the programme, as specified by the respective accreditation body and HEC curricula.	☐	☑	☐	☐	☐	☐
4	The curriculum satisfies the major requirements for the programme as specified by HEC and the respective accreditation body/councils.	☐	☐	☑	☐	☐	☐
5	The curriculum satisfies general education, arts, and discipline requirements for the programme, as specified by the respective accreditation body/council.	☐	☐	☑	☐	☐	☐
6	Information technology components of the curriculum is integrated throughout the programme.	☐	☐	☑	☐	☐	☐
7	Oral and written communication skills of the student are developed and applied in the programme.	☐	☐	☑	☐	☐	☐
8	Different feedback surveys conducted each semester for each course from students and faculty.	☐	☐	☐	☑	☐	☐
Total Encircled Value (TV)		**0**	**15**	**16**	**3**	**0**	**0**
Score 2 (S2) = [TV/(No. of Questions *5)] *100 *Weight =		**17.00**					

Weight = 0.20

Standard-2 Curriculum Design & Organization

	Comments/Observations/Key Findings:		Recommendations/Conditions
1	The curriculum follows HEC guidelines and includes core, general, and interdisciplinary courses, lab work, internships, and a capstone project. Some updates are needed that has been mentioned in recommmendations	1	AI in Biotechnology courses should be added as per HEC 2024 BS Biotechnology policy.
2	Well-integrated research and practical components with highly qualified faculty including Professors, Associate Professors, and Assistant Professors, with ~55% holding PhDs.	2	The lag period of conducting surveys should be removed. The surveys should be conducted in the same semester for true reflection. Furthermore, a mechanism should be developed wherein the results of survey could be used for program improvement.
3	Curriculum is well- aligned with HEC guidelines but does not mention AI-related modules, which are part of the HEC 2024 revised curriculum.	3	Virtual Reality training modules for lab may be sought and curriculum can be updated accordingly for effective practicals.
4	The results of the surveys are not analyzed and used for informed decision making. The course evaluation by student survey used in the document is for the Spring 2024 not the latest one.	4	Integrate emerging technologies in LMS —particularly generative AI—to enhance pedagogical methods for improved learning outcomes.
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Standard-3 Subject-Specific Facilities						Weight = 0.15
Factors Score		NA	5	4	3	2	1
1	Laboratory and computing facilities supporting the program are documented, including their adequacy, accessibility, and alignment with program requirements.	☐	☑	☐	☐	☐	☐
2	Students and faculty have timely access to up-to-date manuals, instructions, and safety documentation, with evidence of availability and use.	☐	☑	☐	☐	☐	☐
3	Each laboratory includes details on technical support personnel, the level and nature of instructional support, and resource availability.	☐	☑	☐	☐	☐	☐
4	Computing infrastructure (hardware, software, and networks) is sufficient to meet the program's teaching and learning needs.	☐	☑	☐	☐	☐	☐
5	Laboratory and computing facilities are regularly assessed against similar programs at top HEIs, with deficiencies and improvements documented.	☐	☐	☑	☐	☐	☐
Total Encircled Value (TV)		0	20	4	0	0	0
Score 3 (S3) = [TV/(No. of Questions *5)] *100 *Weight =		14.40					

Standard-3 Subject-Specific Facilities

	Comments/Observations/Key Findings:		Recommendations/Conditions
1	Lap support was found not enough.	1	Increase lab support staff across campuses.
2	A major challenge is the requirement to attend 15-day practical sessions every semester... especially difficult for job holders and female students who travel 60 km or more.	2	Establish partnerships with biotech industry for specialized lab exposure in remote areas.
3	Lack of enough modern laboratory instruments.	3	The same standard of laboratory equipment should be maintained in all the laboratories of the department.
4		4	Logistical challenges with frequent travel, equipment setup/breakdown, and limited instructors for practical classes necessitate exploring local lab collaborations.
5		5	Establishing a benchmarking framework to compare these resources with those of other higher education institutions would provide valuable context for continuous improvement.
6		6	Regular feedback mechanisms from students and faculty regarding computing services should be institutionalized to inform ongoing enhancements.
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Standard-4 Student Support & Advising						Weight = 0.10
Factors Score		**NA**	**5**	**4**	**3**	**2**	**1**
1	The department has a documented strategy for course offerings, including the frequency of major, elective & allied courses offered by other departments.	☐	☐	☑	☐	☐	☐
2	Courses taught by multiple instructors have clear coordination mechanisms to ensure effective student–faculty interaction and instructional consistency.	☐	☐	☑	☐	☐	☐
3	Students are clearly informed about program requirements through accessible and timely communication channels.	☐	☑	☐	☐	☐	☐
4	An academic advising system is in place, with mechanisms for evaluating its effectiveness.	☐	☑	☐	☐	☐	☐
5	A student counselling system exists, providing access to professional support services when needed, with evidence of availability and utilization.	☐	☐	☐	☑	☐	☐
6	Students have documented opportunities to engage with practitioners and participate in technical and professional societies.	☐	☐	☐	☑	☐	☐
Total Encircled Value (TV)		**0**	**10**	**8**	**6**	**0**	**0**
Score 4 (S4) = [TV/(No. of Questions *5)] *100 *Weight =		**8.00**					

Standard-4 Student Support & Advising

	Comments/Observations/Key Findings:		Recommendations/Conditions
1	Final Year Projects and internships contributes to student withdrawal due to their time-intensive nature, which is hard to accommodate for students having professional obligations.	1	Provide internship and project facilities in remote areas in collaboration with the universities.
2	Lack of proper framework for student counseling for professional development and job placements guidance.	2	Transform academic advising into an integrated counseling framework that supports academic progress, career planning, and personal growth.
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Standard-5 Teaching Faculty/Staff		Weight = 0.20					
Factors Score		**NA**	**5**	**4**	**3**	**2**	**1**
1	A web page shows program areas and the number of specialized teaching staff, along with faculty CVs is publically available.	☐	☑	☐	☐	☐	☐
2	Teaching staff strength is sufficient to deliver the curriculum and achieve programme objectives.	☐	☐	☐	☑	☐	☐
3	Student feedback on teaching and assessment is collected each semester and used for instructional improvement.	☐	☑	☐	☐	☐	☐
4	The department has defined criteria for faculty currency in the discipline, and the percentage of faculty meeting these criteria is documented.	☐	☐	☐	☐	☐	☐
5	Mechanisms are in place to ensure full-time faculty have adequate time for scholarly and professional development.	☐	☐	☐	☐	☐	☑
6	Teaching staff development programs are available at departmental and institutional levels, with documented evidence of effectiveness.	☐	☐	☐	☑	☐	☐
7	Faculty development programs are evaluated regularly, and results are used for program enhancement.	☐	☐	☐	☑	☐	☐
8	Programs for faculty motivation and job satisfaction are implemented, with effectiveness measured through periodic faculty surveys.	☐	☐	☐	☑	☐	☐
Total Encircled Value (TV)		**0**	**10**	**0**	**12**	**0**	**1**
Score 5 (S5) = [TV/(No. of Questions *5)] *100 *Weight =		**11.50**					

Standard-5 Teaching Faculty/Staff

	Comments/Observations/Key Findings:		Recommendations/Conditions
1	Number of instructors in the labs are not sufficient to cater the requirements of increasing number of students in each semester.	1	More instructors in the labs should be hired to cater the requirements of increasing number of students in each semester.
2	Adequate time is not alloacted to faculty for scholarly work and professinal development.	2	Strengthen existing workload management practices to create a balanced distribution that allows faculty to contribute to teaching excellence and scholarly activities.
3		3	The department should prepare training and professional development plan for faculty.
4		4	develop departmental research strategy that strengthens research culture and systematically engages students in faculty-led projects.
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Standard-6 Institutional Policies & Process Control		NA	5	4	3	2	1
Factors Score		**NA**	**5**	**4**	**3**	**2**	**1**
1	Admission criteria are clearly defined and communicated to prospective students, and periodically evaluated for improvement.	☐	☑	☐	☐	☐	☐
2	Policies and procedures for credit transfer are documented and accessible.	☐	☑	☐	☐	☐	☐
3	Student registration processes are clearly outlined, and academic progress is systematically monitored to ensure adherence to degree requirements.	☐	☑	☐	☐	☐	☐
4	Procedures are in place to verify that graduates meet all programme requirements, with periodic evaluations to inform improvements.	☐	☐	☑	☐	☐	☐
5	Processes for recruiting and retaining qualified teaching staff are documented, aligned with the institutional mission, and evaluated for effectiveness.	☐	☐	☑	☐	☐	☐
6	Faculty evaluation and promotion processes reflect institutional mission and are periodically reviewed for continuous improvement.	☐	☐	☑	☐	☐	☐
7	Teaching and learning processes are designed to ensure instructional effectiveness and student-centered learning, using evaluation mechanisms for improvement.	☐	☐	☑	☐	☐	☐
8	Academic and support information is provided to prospective and current students to support informed decision-making and successful progression.	☐	☑	☐	☐	☐	☐
9	Programme expectations and student responsibilities are clearly communicated throughout the study period.	☐	☐	☑	☐	☐	☐
10	Upon graduation, students receive a comprehensive academic record reflecting their achievements.	☐	☑	☐	☐	☐	☐
11	Programme practices align with institutional values, ethical standards, and policies on equality, diversity, inclusion, and academic integrity.	☐	☐	☑	☐	☐	☐
12	Transparent procedures exist to safeguard the rights and interests of students, faculty, and staff, including handling of complaints and appeals.	☐	☑	☐	☐	☐	☐
13	All critical processes (admissions, teaching, student progress, evaluation) are periodically reviewed, and evaluation results are used for enhancement.	☐	☐	☐	☑	☐	☐
Total Encircled Value (TV)		**0**	**30**	**24**	**3**	**0**	**0**
Score 6 (S6) = [TV/(No. of Questions *5)] *100 *Weight =		**8.77**					

Weight = 0.10

Standard-6 Institutional Policies & Process Control

	Comments/Observations/Key Findings:		Recommendations/Conditions
1		1	Expanding the use of KPI dashboards to provide deeper insights, analyze trends, and support Data-informed decision-making.
2	Timelines are not specifically mentioned for regular reviews of policies.	2	Ensure regular updates of academic policies.
3	Transparency in Complaint Handling" is mentioned but the process is not defined.	3	Refining complaints and query handling procedures to make them more transparent and Time-bound. Evaluate for continuous improvement.
4		4	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.
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Standard-7 Institutional Support & Facilities		NA	5	4	3	2	1
Factors Score		**NA**	**5**	**4**	**3**	**2**	**1**
0.2	The programme provides a self-evaluation of its compliance with standards, identifying gaps and plans for improvement where needed.	⊘	☐	☐	☐	☐	☐
2	Secretarial support, technical staff, and office equipment are sufficient to support programme operations.	⊘	☐	☐	☐	☐	☐
3	Data on graduate students, research assistants, and PhD students over the past three years are provided, along with teacher-to-graduate student ratios.	⊘	☐	☐	☐	☐	☐
4	Library, laboratory, and computing resources are documented, and their adequacy assessed relative to programme needs.	⊘	☐	☐	☐	☐	☐
5	Facilities and infrastructure supporting modern teaching and learning practices are available and evaluated for adequacy.	⊘	☐	☐	☐	☐	☐
6	The library's technical collection and user support services are sufficient to meet academic and research needs.	⊘	☐	☐	☐	☐	☐
7	Classrooms and faculty offices are adequate in number, space, and functionality to support effective teaching and learning.	⊘	☐	☐	☐	☐	☐
Total Encircled Value (TV)		**7**	**0**	**0**	**0**	**0**	**0**
Score 7 (S7) = [TV/(No. of Questions *5)] *100 *Weight =		**Not Applicable**					

Weight = 0.05

Standard-7 Institutional Support & Facilities

	Comments/Observations/Key Findings:		Recommendations/Conditions
1	Name of mobile application is not mentioned. There is no content, captions for providing content in multilingual format.	1	Add caption in different local languages in lecture videos for better understanding and similarly for other reading material.
2	The access to digital library with sufficient technical collection is not provided to faculty and students.	2	The university should develop its own digital library with sufficient technical collection of books available for faculty and students.
3	There are gaps in international collaborations, industry partnerships.	3	Links should be established with other universities and industry to expose student to the diverse real life problems.
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Standard-8 Institutional General Requirements		Weight = 0.05					
Factors Score		**NA**	**5**	**4**	**3**	**2**	**1**
1	Postgraduate research programmes are offered only when institutional academic standards—aligned with national expectations—can be met.	⊘	☐	☐	☐	☐	☐
2	Detailed regulations on admission, registration, assessment, and awarding are documented, accessible, and open to review by the institution and department.	⊘	☐	☐	☐	☐	☐
3	Research activities align with regional, national, and international societal and industrial needs.	⊘	☐	☐	☐	☐	☐
4	Research opportunities are offered only where appropriate academic supervision, research infrastructure, and student support are available.	⊘	☐	☐	☐	☐	☐
5	Publicity materials for research programmes are clear, accurate, and detailed enough to support informed student choice.	⊘	☐	☐	☐	☐	☐
6	Admission procedures are well-defined, consistently applied, and ensure that only qualified candidates are selected through a multi-expert review process.	⊘	☐	☐	☐	☐	☐
7	Admissions processes are fair, transparent, and promote equality of opportunity.	⊘	☐	☐	☐	☐	☐
8	Research student entitlements and responsibilities are clearly defined and communicated at the start of the programme.	⊘	☐	☐	☐	☐	☐
9	New research students are supported with orientation activities that help them understand the academic and social environment of the institution.	⊘	☐	☐	☐	☐	☐
10	The feasibility of research projects is assessed prior to admission, for both full- and part-time students.	⊘	☐	☐	☐	☐	☐
11	Research students have access to sufficient training to develop the skills required for completing their research and preparing for future careers.	⊘	☐	☐	☐	☐	☐
12	Supervisors are qualified subject experts with the skills and experience necessary to guide, monitor, and support research students.	⊘	☐	☐	☐	☐	☐
13	Research supervision is structured to ensure consistent progress tracking and timely communication with students.	⊘	☐	☐	☐	☐	☐
14	Research assessment processes are clearly defined, rigorous, fair, consistent, and well communicated to both students and supervisors.	⊘	☐	☐	☐	☐	☐
15	Systems have been set up to collect and address feedback from students and supervisors about the research experience and support infrastructure.	⊘	☐	☐	☐	☐	☐
16	Clear procedures for complaints and appeals are documented, consistently enforced, & readily available to provide support throughout the process.	⊘	☐	☐	☐	☐	☐
17	The institution regularly reviews its effectiveness in meeting the quality standards (Precepts) of research degrees awarded in its name.	⊘	☐	☐	☐	☐	☐
Total Encircled Value (TV)		**17**	**0**	**0**	**0**	**0**	**0**
Score 8 (S8) = [TV/(No. of Questions *5)] *100 *Weight =		**Not Applicable**					

Standard-8 Institutional General Requirements			
Comments/Observations/Key Findings:			**Recommendations/Conditions**
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ASSESSMENT SCORE	=	S1	+	S2	+	S3	+	S4	+	S5	+	S6	+	S7	+	S8
	=	9.67	+	17.00	+	14.40	+	8.00	+	11.50	+	8.77	+	NA	+	NA

= **69.34 / 90** **(77.04%)**

Note: Score Normalized as '02' Standard(s) is (are) 'Not Applicable'.

OVERALL JUDGEMENT = **Approved with Recommendations**

Overall Comments by Assessment Team:

Category wise comments have been posted in the designated rows and columns. Overall, during the evaluation of the BS Biotechnology related aspects, the Assessment Team is satisfied with the current strategy, resources and plan. However there are some areas where there is a room for improvement like addition of technical manpower where needed, addition of virtual reality practicals, catering the needs of students from far flung areas and providing internhip facilities to them in future.

Comments by DQE Coordinator:

The BS Biotechnology program has a fair and transparent assessment model at the course level is in practice. The curriculum is quantitatively aligned with the program outcomes and the new undergraduate policy is adequately implemented. The Comprehensive coverage of biotechnology core areas effectively blends theory with practice.
There exist state of the art laboratories infrastructure including Mobile and smart labs. Furthermore, communication tools like LMS, helpdesk, MDBs, and live sessions are effectively integrated to support learning.