Western UNIVERSITY · CANADA

Biochemistry
Final Assessment Report & Implementation Plan
August 2026

Faculty / Affiliated University College	Faculty of Science, Schulich School of Medicine & Dentistry	
Degrees Offered	Bachelor of Medical Sciences (BMSc), Bachelor of Science (BSc)	
Date of Last Review	2017-2018	
Modules Reviewed	Honours Specialization in Biochemistry Honours Specialization in Biochemistry and Cancer Biology Major Biochemistry Minor Biochemistry	
External Reviewers	Dr. John Dawson Professor, College of Biological Science University of Guelph	Dr. Jeffery Wigle Professor, Department of Biochemistry and Medical Genetics, University of Manitoba
Internal Reviewers	Prof. Tricia Johnson, Professor, Department of Visual Arts	Asad Awawdeh Undergraduate Student
Date of Site Visit	March 5-6, 2026	
Date Review Report Received	March 23, 2026	
Date Program/Faculty Response Received	Program Response: May 11, 2026 Faculty Response: May 11, 2026	
Evaluation	Good Quality	
Approval Dates	SUPR-U: September 22, 2026 ACA: October 6, 2026 Senate (for information): October 23, 2026	
Year of Next Review	2033-2034	
Progress Report	June 2029	

Overview of Western's Cyclical Review Assessment Reporting Process

In accordance with Western's Institutional Quality Assurance Process (IQAP), the Final Assessment Report (FAR) provides a summary of the cyclical review, internal responses, and assessment and evaluation of the Undergraduate Biochemistry Program, delivered by the Schulich School of Medicine & Dentistry.

This FAR considers the following documents:

- the program's self-study brief;
- the external reviewers' report;
- the response from the Program; and
- the response from the Dean, Schulich School of Medicine & Dentistry

This FAR identifies the strengths of the program and opportunities for program enhancement and improvement, and details the recommendations of the external reviewers – noting those recommendations to be prioritized for implementation.

The Implementation Plan details the recommendations from the FAR that have been selected for implementation, identifies who is responsible for approving and acting on the recommendations, specifies any action or follow-up that is required, and defines the timeline for completion.

The FAR (including Implementation Plan) is sent for approval through the Subcommittee on Program Review - Undergraduate (SUPR-U) and the Senate Committee on Academic Curriculum and Awards (ACA), then for information to Senate and to the Ontario Universities' Council on Quality Assurance. Subsequently, it is publicly accessible on Western's IQAP website. The FAR is the only document from the cyclical review process that is made public; all other documents are confidential to the Undergraduate Biochemistry Program the Schulich School of Medicine & Dentistry and SUPR-U.

Executive Summary

At the interface between the physical sciences and life sciences, the undergraduate Biochemistry program is designed to provide students with foundational and advanced competencies in knowledge, literacy, lab work, research methodology, scientific writing, and communication. Students enter the BMSc Program (and their chosen modules) in Year 3 and are then registered in the Schulich School of Medicine & Dentistry for both Years 3 and 4. In Year 1 and Year 2 students complete coursework in Biology, Chemistry, Physics, and Math/Statistics and learn foundational concepts. In Year 3 and 4 students progress to a series of more advanced courses that explore the underlying mechanisms of the foundational concepts introduced in Year 2, with an increasing emphasis on experimental methods, data analysis, and scientific communication. The

Biochemistry undergraduate program places a strong emphasis on experiential learning and the development of practical research competencies, particularly in laboratory techniques, analytical reasoning, and communication of scientific information. Total enrolment of students registered in a least one Biochemistry module in 2024-2025 was 226 students.

Led by the Biochemistry undergraduate program committee, the self-study considered the results of student and alumni surveys, a dedicated retreat with faculty, staff undergraduate and graduate students, as well as a curriculum mapping exercise.

The external reviewers shared a positive assessment of the undergraduate Biochemistry Program. They offer three recommendations with considerations for further enhancement.

Strengths and Innovative Features Identified by the Program

- Internationally recognized scholarship, strong teaching expertise, and broad faculty participation in undergraduate research supervision.
- Multiple program pathways allow students to combine biochemistry with biomedical sciences, business, and other disciplines. The Cancer Biology specialization adds a clinically oriented, community-engaged pathway.
- Range of experiential and faculty-supervised research beginning in third year: E.g., a traditional Honours thesis, a student-directed team research project, community-engaged learning and Science Co-op placements.
- Specialized course breadth which includes bioinformatics, biomedical big-data analysis, coding, artificial intelligence and machine learning, synthetic biology, CRISPR, proteomics, metabolomics, and other “omics” approaches.
- EDIDA-informed learning-outcome revisions, curriculum-decolonization work, flexible assessments, accessible learning resources, student representation on committees, annual exit surveys, and a strong student-led Biochemistry Club that supports mentoring, academic programming, networking, and community-building.
    - The “Scientist Spotlight” series in Biochemistry 2280A includes scientists from under-represented groups and or diverse backgrounds in which students write a short reflection on their learning.

Concerns and Areas of Improvement Identified and Discussed by the Program

- Insufficient administrative support as the result of the redistribution of courses.
- Elimination of joint Honours Specializations and their replacement by Double Majors may reduce student choice and access to thesis-based research.
- Insufficient coverage of metabolism, the loss of a clinical biochemistry course, and student concerns about statistics and applied data analysis.

- The program is considering additional upper-year courses and an interdisciplinary Biochemistry and Computer Science project course as a clearer bioinformatics pathway.
- Anticipated retirements threaten structural biology and enzymology teaching capacity.
- Ongoing pressure on staff, facilities, and equipment; for instance, periods of excessive workload for staff and limited laboratory-equipment renewal funding.
- Exit surveys identify some inconsistencies and concerns about course scheduling, coordination of topics across courses, grading consistency, direct contact with faculty, career and industry preparation, and instruction in ethics.

Review Process

As part of the external review, the review committee, comprising two external reviewers, one internal reviewer and a student reviewer, were provided with Volume I and II of the self-study brief in advance of the scheduled review and then met in-person over two days with the:

- Vice-Provost, Academic Programs
- Vice-Provost, Academic Planning, Policy and Faculty
- Director, Academic Quality and Enhancement
- Western Libraries Team Members
- Vice-Dean, Academic, Schulich School of Medicine & Dentistry
- Associate-Dean, Academic, Schulich School of Medicine & Dentistry
- Associate Dean Graduate and Postdoctoral Studies,
- Department Chair
- Undergraduate Chair
- Undergraduate Program Committee Members
- Program Faculty Members
- Undergraduate Program Staff
- Undergraduate Students
- Graduate Teaching Assistants

Following the site visit, the external reviewers submitted a comprehensive report of their findings which was sent to the Program and Decanal Office for review and response. Formative documents, including Volumes I and II of the Self-Study, the External Report, and the Program and Decanal responses form the basis of this FAR. The FAR is collated and submitted to SUPR-U by the Internal Reviewer with the support of the Office of Academic Quality and Enhancement.

Summative Assessment – External Reviewers' Report

External reviewers shared that *"the Department of Biochemistry at Western University has many strengths with respect to diverse experiential learning opportunities, an advanced undergraduate laboratory course and a wide variety of third- and fourth-year courses taught by subject experts in the field.*"

Strengths of the Program:

- Strong research culture and expertise among faculty members.
- Good progression from foundational science to advanced biochemical reasoning and analysis, while emphasizing critical thinking, quantitative reasoning, communication, and research preparedness.
- Advanced undergraduate laboratory, fourth-year research opportunities, community-engaged capstones, interdisciplinary project courses, and explicit professional-skills development as diverse and distinctive experiential learning opportunities.
    - The third-year teaching laboratory is well equipped and highly regarded.
- Active and planned developments in big data, bioinformatics, metabolomics, RNA biology, and other computational or data-intensive areas position the curriculum appropriately in relation to the evolving discipline.

Prospective Areas of Improvement for the Program to Consider

- Access to laboratory- and research-intensive experiences, especially fourth-year projects, varies according to supervisor availability, laboratory capacity, and funding.
- Uncertainty about assessment criteria and expectations, particularly in large or team-taught courses and during key program transitions.
- Anticipated retirements may affect upper-year course sustainability, disciplinary breadth, research supervision, and the number and diversity of project placements.
- Consider strengthening scientific writing earlier in the curriculum rather than creating a new second-year Biochemistry laboratory.

Summary of the Reviewers' Recommendations and Program/Faculty Responses

The following are the reviewers' recommendations in the order listed by the external reviewers.

Reviewers' Recommendation	Program/Faculty Response
Recommendation #1: Student Experience and Communication **a) Implement a standard set of minimum expectations for assignment release,** including clear criteria or rubrics and explicit guidance on "what good looks like." **b) Make transition expectations explicit,** particularly at the second-to-third year transition, through a short, program-level communication (e.g., "what changes in Year 3") delivered via required courses and/or advising touchpoints. **c) Second year Biochemistry laboratory**: Prioritize an enhanced focus on scientific writing earlier in the curriculum rather than establishing a new second-year Biochemistry laboratory. **d) Enhance communication pathways for student support,** including clear information about who to contact for course-level issues, advising questions and program concerns. **e) Continue to actively advertise student events and opportunities,** using both electronic communication and in-class announcements, to strengthen a sense of community beyond students already engaged in the Biochemistry Club.	**Program:** Beginning in summer 2026, the Undergraduate Chair and Associate Undergraduate Chair will meet with course coordinators to review syllabi, assignment guidance, and grading rubrics. These discussions will share best practices, develop common syllabus language, and improve consistency across courses and instructors while respecting different teaching and assessment approaches. Biochemistry 3381A will serve as a useful exemplar for communicating expectations. The program will also strengthen the transition into third year, when students formally enter Biochemistry modules. Following adjudication, students will receive a "Welcome to Biochemistry" message outlining assessment practices, academic expectations, examples of successful work, practical advice, research pathways, and available supports. This information will be reinforced early in Biochemistry 3382A, with introductions to the Undergraduate Chair and Academic Counsellor, and coordinated with BMSUE communications. The Department agrees that a new second-year Biochemistry laboratory is not warranted. Although it has limited influence over earlier Biology instruction, scientific writing is developed extensively through scaffolded laboratory reports, clear rubrics, detailed feedback, and revision opportunities in Biochemistry 3380G, with further practice in Biochemistry 3381A and Biochemistry 3382A. Expectations regarding appropriate AI use in writing assignments will remain an ongoing area of discussion. Existing advising and support resources will be highlighted more prominently in transition communications. Faculty will also sustain stronger connections with the Western Biochemistry Club (WBC) by using Undergraduate Program Committee meetings to coordinate awareness of and support for student-led events and outreach. **Faculty:** The decanal team supports the program's response and notes that students already have extensive advising resources, including Medical Sciences

	1000Y, Intent to Register events, BMSUE and Science advising, online tools, drop-in and Zoom support, newsletters, and program-planning worksheets. The central challenge is not resource availability but the timing and effectiveness of communication, since students may overlook information until it becomes immediately relevant and may not engage consistently with email or websites. Communication could be strengthened through coordinated newsletters, in-class announcements, and collaboration with program clubs and Science Student Council representatives to promote events, initiatives, and available supports through channels students are more likely to notice.
Recommendation #2: Student access to fourth-year projects / project courses **a) Develop and implement a single, equitable and transparent screening and matching process for entry into fourth-year project courses at the end of third year.** **b) Use the screening and matching process as the authoritative point of entry into the program**, with a clearly published timeline (communicated earlier in third year) outlining project availability, student actions, and matching decisions. **c) Define and communicate explicit expectations regarding pre-matching, if it will be used at all**, including what is permitted, what is discouraged, and how exceptions are handled. The formal process should be strengthened to ensure transparency and equity. **d) Review building and laboratory access policies and training pathways** as they affect undergraduate research continuity and equity, ensuring safety requirements are met while reducing avoidable barriers to student participation.	**Program:** The program recognizes that its previous GPA-based matching system could disadvantage students because of differences in confidence, networks, socioeconomic circumstances, and other factors unrelated to scientific potential. Revised BMSUE progression now enables capstone allocation during the Winter term of third year, creating an opportunity to design a more equitable, transparent, and less stressful process. Led by the Undergraduate Program Committee and coordinated with partner departments, the new approach may combine GPA, structured interviews, student and supervisor rankings, regulated pre-matching, and student choice among capstones. Timelines, expectations, available projects, and routes to supervisors will be communicated earlier. Under Schulich policy, undergraduates must be supervised in laboratories and core facilities. Host laboratories remain responsible for required training and supervision, while broader efforts are underway to formalize and support core-facility training. The program will position the thesis and student-directed capstones as equally legitimate options offering different experiences. The entrepreneurship component of the student-directed course may be strengthened, and additional alternative capstones could further expand student choice and capacity. A new Research Partnership Agreement establishes common expectations for supervision, laboratory and seminar participation, and timely thesis feedback, with the aim of improving consistency and student satisfaction. Finally, feedback from a cross-departmental student focus group will inform revisions to upcoming

e) Resource a structured training and support model for undergraduates, where specialized infrastructure is required (e.g., TA- supported of core-facility-supported training). **f) Continue to support and value alternative capstone and project-based pathways**, such as the Student-Directed Research Project course (Biochemistry 4484E), ensuring they are not perceived as "second-rate" options but rather as legitimate, high-quality experiential learning opportunities. **g) Ensure expectations for project course are consistent between supervisors**. **h) Continue to Optimize the 0.5 credit *Beyond the Bench Biochemistry* 4986Y course** relative to the now 1.0 credit fourth-year 4985 research project course, with attention to combined workload expectations.	offerings of the companion professional-skills course, particularly its summer and Fall 2026 iterations. **Faculty:** The decanal team supports the program's response. There may have been some disconnect between what the reviewers were hearing from the students and the current state of the programs. Several recent changes to both the Honours and Majors program address many of the key points raised by the reviewers. For example, students are now admitted to the Honours program after 2nd year and before the beginning of 3rd year. Additional research opportunities are available through the Biochemistry Independent Study Course and Medical Sciences 3383F/G/Z and a new alternative capstone Medical Sciences 4000E Partnering for Impact in the Medical Sciences. This course provides a capstone project with a community, clinical or industry/innovation partner for students in double major programs. This course is new (starting Sept 2026) so students currently in the program may not have been aware of the changes since they are already enrolled in the program and would not have impacted them. With respect to how students are selected for the 4th year thesis research projects, a broader discussion involving all BMSUE programs and Neuroscience is necessary.
Recommendation #3: Faculty Renewal and Strategic Capacity **a) Develop a forward-looking faculty renewal plan** that explicitly connects anticipated retirements and strategic research directions to impacts on fourth year research project capacity and diversity, and the sustainability of high-enrolment upper-year courses. **b) Use upcoming recruitments to extend and consolidate strengths in structural biology and enzymology** areas identified as priorities and closely tied to fourth-year research capacity and disciplinary coherence.	**Program:** The Department thanks the reviewers for emphasizing faculty renewal and confirms that strategic workforce planning is a central responsibility of its elected Strategic Planning Committee. The Committee considers undergraduate and graduate teaching, project supervision, graduate supervision, and the need to sustain disciplinary expertise. Its annually ranked recruitment priorities currently include structural biology, enzymology and protein function, metabolomics, proteomics, synthetic and molecular biology, genomics, and intracellular organization and signaling Departmental priorities are considered alongside those of other basic science departments through Schulich's rolling five-year "30x30" recruitment plan and are then submitted to the Dean's Office. Proposed appointments must demonstrate how they address program gaps, create synergies, or introduce strategically important expertise. The same process supports succession planning for teaching-intensive faculty, as demonstrated by recent recruitments.

c) Make explicit the link between faculty renewal and access to fourth-year project courses, ensuring that hiring priorities are informed not only by research strategy but also by undergraduate experiential learning needs. **d) Consider a succession plan for Teaching Focused Faculty,** to ensure continued excellence and relevance of the second and third year Biochemistry courses. **e) Clarify supervision expectations, recognition, and support within departmental workload planning**, so that high-impact experiential components and capstone courses, remain sustainable and equitably distributed among faculty. **f) Align renewal planning with infrastructure and space considerations**, recognizing that research-active hires in areas such as structural biology and enzymology require appropriate facilities to fully realize their potential contributions to undergraduate training.	The principal limitation is that recruitment can begin only after a faculty member retires, meaning capacity inevitably trails need. Priorities must also compete across departments. Monthly discussions among the Dean and Department Chairs help mitigate gaps through collaborative teaching and Limited Duties appointments. Supervisory expectations are addressed through the Departmental Workload Document, annual faculty workload discussions, and formal performance evaluation. During the document's upcoming review, language will be added regarding common expectations for experiential learning. Concerns about uneven supervision will also be addressed through a supervisor-student partnership agreement establishing baseline expectations for thesis courses. Infrastructure and space planning are coordinated through the Dean's Office and a faculty-level planning group. A centralized database tracks current and anticipated needs so that space and equipment planning can begin when positions are approved. Although backlogs remain, this process has become more timely and forward-looking. The forthcoming Bioconvergence Centre is expected to provide significant new laboratory and core-facility space, alleviating current constraints by the next review. **Faculty:** The program's response provides an excellent narrative detailing the departmental, Faculty (Schulich School of Medicine and Dentistry) and Western's policies and procedures concerning hiring, teaching, workload etc.

Implementation Plan

The Implementation Plan provides a summary of the recommendations that require action and/or follow-up. In each case, the Undergraduate Program Chair, and the Deans of the Faculties are responsible for enacting and monitoring the actions noted in Implementation Plan.

Recommendation	Proposed Action and Follow-up	Responsibility	Timeline
Recommendation #1 Student Experience and Communication	• Setup meetings with the course coordinators with a focus on the review of syllabi, guidance on assignments, grading rubrics and use of AI. • Create and deliver a "Welcome to Biochemistry" message to students featuring the Undergraduate Chair and the Academic Counsellor and information about who to contact in various situations. • Coordinate faculty awareness of, and support for, WBC events and initiatives via monthly undergraduate program committee meetings.	Undergraduate Chair; Associate Undergraduate Chair	By September 2027
Recommendation #2 Student access to fourth-year projects	• Design a more equitable 4th year project matching process in coordination with the Department of Microbiology and Immunology, and the Department of Anatomy and Cell Biology. ○ Implement early communication about the process, and the various ways of securing supervisors. • Develop more alternative capstone opportunities (for example in the domain of the scholarship of teaching and learning) to further support the idea of the research thesis being just one of several attractive capstone possibilities.	Undergraduate Chair; Undergraduate Program Committee	By September 2027
Recommendation #3 Faculty Renewal & 3e) Clarify supervision expectations and support within departmental workload planning	1. Assess the extent to which the strategic workforce planning process was able to help bolster faculty renewal in light of fourth year research project capacity needs. 2. Formulate a supervisor-student partnership agreement to capture baseline expectations of both faculty and thesis course students – to help clarity supervision related expectations and workload.	Undergraduate Chair	1. Follow-up in 2029 progress report. 2. By January 2027