FINAL ASSESSMENT REPORT

Institutional Quality Assurance Program (IQAP) Review

HONOURS BIOCHEMISTRY PROGRAM (UG)

Date of Review: March 18th and 19th, 2024

In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response, and assessments of the undergraduate program delivered by the Honours Biochemistry program. This report identifies the significant strengths of the program, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the Final Assessment Report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations and who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

Executive Summary of the Review

In accordance with the Institutional Quality Assurance Process (IQAP), the Faculty of Health Sciences submitted a self-study in March 2024 to the Vice-Provost Teaching and Learning to initiate the cyclical program review of the Honours Biochemistry undergraduate program. The approved self-study presented program descriptions, learning outcomes, and analyses of data provided by the Office of Institutional Research and Analysis.

Two arm's length external reviewers and one internal reviewer were endorsed by the Vice-Dean, Education of Faculty of Health Sciences and selected by the Vice-Provost Teaching and Learning. The review team reviewed the self-study documentation and then conducted an in-person site visit on March 18-19, 2024. The visit included interviews with the Vice-Provost Teaching and Learning, Deputy Provost, Executive Vice-Dean and Associate Vice-President Academic of Faculty of Health Sciences, the Vice-Dean Education of Faculty of Health Sciences, Chair and Acting Associate Chair of the Biochemistry and Biomedical Sciences program, and meetings with groups of current students, full-time faculty, and support staff.

The Vice-Dean Education of Faculty of Health Sciences, the Chair of the Biochemistry and Biomedical Sciences program, Associate Chair and Acting Associate Chair of the BBS Undergraduate Education, submitted responses to the Reviewers' Report in June 2024. Specific recommendations were discussed, and clarifications and corrections were presented. Follow-up actions and timelines were included.

Strengths

Overall, the reviewers' feedback has been extremely positive. The undergraduate BBS programs' strengths can be categorized into two primary areas.

- **Program culture**

The reviewers commended the positive culture and community atmosphere within all our Biochemistry program offerings (herein referred to as "BBS program"). They also noted the overwhelming positivity and engagement of our students when describing their experiences in our program.

The following excerpt from the reviewers' report best highlights these recurring themes:

"*The program's academic culture and sense of community stand out, which is a testament to the exceptional leadership and dedicated efforts of various staff and faculty… The maturity and positivity unanimously exhibited by the students who participated in the review about their studies further underscore the program's success.*"

- **Curriculum prioritization**

The reviewers highlighted the synergy between the undergraduate program curriculum and cutting-edge research conducted in the BBS department. Furthermore, the reviewers commended the diligent efforts of numerous course instructors in integrating research topics into both lab and lecture-based courses.

The following excerpt from the reviewers' report best highlights these recurring themes:

"*The program prioritizes an evolving curriculum that stays up to date with current scientific discussions and cutting-edge techniques. Students get hands-on laboratory experience in their second year, which allows them to build professional relationships with their peers and some of the core teaching faculty. The theorical knowledge and practical application in the program prepare students well for third and fourth-year research projects as well as future research endeavours such as graduate studies.*"

The reviewers also noted the following BBS program strengths:

1. A strong alignment of the program learning outcomes (PLOs) with undergraduate level expectations. Specifically, "*These PLOs are adeptly crafted to not only foster students' holistic growth and development but also to emphasize 21st century learning goals, which will prepare them for their future endeavours.*"

2. The BBS program maintains a strong understanding and commitment to McMaster's priorities, namely: Inclusive Excellence (priority 1), Teaching and Learning (priority 2), and Research and Scholarship (priority 3).

3. The BBS department's new initiative, Summer Scholar's Program (SSP), aimed at furthering the BBS department's commitment to equity, diversity, and inclusion (EDI).

Recommendation #1 (R1)

Implement a formal oversight mechanism dedicated to equity, diversity, and inclusion (EDI) as it pertains to teaching and learning.
Department's Response and Actions to be Taken **Reviewers' recommendation R-1a:** The reviewers suggested establishing a formalized departmental EDI structure that oversees efficient implementation of EDI principles in the program curriculum. One suggestion was the establishment of a departmental EDI committee whose aim is to monitor the use of EDI practices throughout the courses, ensure issues related to EDI are tackled in a timely manner, and provide EDI-related resources to BBS members for professional development. **Departmental response and action R-1a:** The BBS department will engage with the FHS Office of Equity and Inclusion (Saroo Sharda, Associate Dean Equity and Inclusion) and begin talks to design a system that will identify and formalize the EDI initiatives currently implemented by BBS faculty in their undergraduate courses. The establishment of an EDI lead position within the department, supported by a committee, has already been discussed at BBS Cabinet. While we have not ruled out this model of EDI oversight, this is a challenge in a smaller department like ours with only 30 faculty members. A more sustainable model might be to incorporate EDI principles review in our committees that already exist. We commit to exploring this option. **Reviewers' recommendation R1-b:** The reviewers proposed the implementation of a system to track student metrics as they progress through the programs. Metrics include demographics, research opportunities, post graduation, etc. **Departmental response and action R1-b:** Demographic data is not typically collected by our program, though some level of demographic data may be collected at the Faculty level. With respect to other data, our BBS undergraduate programs office collects data on student course-based research opportunities, and this data is consulted with respect to research and thesis course placements. The BBS program does not have a formal system for tracking students after graduation, though we can access some metrics such as percent of students who enter our graduate program, students who enter medical school, etc. Once students enter other fields (i.e. work force) the only way we can track these students is through alumni surveys, which in the past have had extremely low completion rates. The reviewers suggested establishing a LinkedIn group for the program which would allow the program to connect with alumni after they graduate. Our BBS program will consult with the FHS Office of Equity and Inclusion regarding the demographic data, and we will discuss the possibility of setting up a BBS LinkedIn group. **Reviewers' recommendation R1-c:** The reviewers highlighted another area for improvement related to equity: the organization of the "Meet the Profs Night" event, typically led by the BBS and BDC

(Biomedical Discovery and Commercialization) student societies. The main issue identified was that the event date was set without fully considering the availability of all BBS/BDC students in the program. To enhance inclusivity, this and similar events should be better structured to ensure their timing accommodates the maximum number of participants.

Departmental response and action R1-c: The BBS/BDC programs have several student society-run events that occur throughout the academic year. One such event is the "meet the profs night" event which is coordinated by both the BBS and BDC student societies, in collaboration with the BBS undergraduate office. This event allows both BBS and BDC students to interact with the BBS professors and is a great venue for students to network with professors. The student society presidents typically choose a day that best works with the BBS professors and the students are responsible for the organization. While efforts are made to select a day that does not conflict with other academic events, we hope it is appreciated that scheduling a single event to accommodate hundreds of students and dozens of faculty members requires compromises to be made. This scheduling is largely outside the control of the department.
Also, this event is typically run once (in term 1), however adding a second "meet the profs" night event in term 2 could make it more flexible for students to attend one or both events, and it allow the BBS office an opportunity to invite professors from other programs/faculties who often take BBS/BDC undergraduate thesis students in their labs. This option could be explored.

Dean's Response:

With respect to R1a, the department is planning on exploring this recommendation further which we support.

R1b: The Office of the Vice-Dean, Education will work with several University and Faculty partners to explore mechanisms to improve data gathering pertaining to these and other issues, including bringing the matter to UGC, and exploring with the EIO around the student census data, and the FHS Associate Dean Equity & Inclusion. We will also include IRA and the FHS marketing and alumni affairs for this item and recommendation R3b.

R1c: In work being done to support Student Societies in the FHS, the Office of the Vice-Dean will have discussions with Student Society leaders exploring how they approach making events inclusive for their fellow students. This may not have much impact on this very large faculty-involved event, but it may work to increase inclusivity more broadly.

Recommendation #2 (R2)

Reframe the narrative about the third-year research requirement to reduce student anxiety and prevent decision-making based on perceived constraints.

Department's Response and Actions to be Taken

Reviewers' recommendation R2-a: The reviewers commented on the admission requirements to Level III Biomedical Research Specialization. While the requirements themselves are appropriate, the

reviewers noted that some students may have opted out of the specialization due to perceived competitiveness around lab placements. The reviewers acknowledged that securing a lab placement in third year of the Biomedical Research Specialization is not mandatory for degree completion. Instead, students can take Biochemistry 3LA3, a course conducted in the teaching labs, to meet this degree requirement. This course, which imparts advanced laboratory skills in a teaching lab environment, is highly regarded by the faculty for its effectiveness in training students in technical skills.

Departmental response and action R2-a: Given that some students perceive Biochem 3LA3 as a "backup" or "contingency" plan for one of the requirements of the Biomedical Research Specialization stream, the narrative needs to be changed to showcase this course as the main requirement with "Biochem 3R06 or 3A03" as alternatives to the 3LA3 required course. This change can be implemented multiple ways:

- A change in the course calendar from the current (3-6 units from Biochem 3A03, 3LA3, 3R06) to 3 units of Biochem 3LA3 with a note specifying that 3A03/3R06 are allowable substitutes.
- A change in the narrative when advising students about the different level III program offerings.

Reviewers' recommendation R2-b: The reviewers addressed the student perception that not securing a 3rd year research course lab placement will negatively impact the success of securing a 4th year lab placement.

Departmental response and action R2-b: Efforts will be made to better advise students that not taking a third-year research course does not hinder the chances of securing a fourth-year thesis. These discussions need to be initiated by the BBS undergraduate office, rather than student societies. The student societies can then amplify this message to students in the program.

Reviewers' recommendation R2-c: The reviewers noted that students may perceive the "core" stream of the Biochemistry program to be a downgrade from the Specialization streams.

Departmental response and action R2-c: We will emphasize the message that all streams of the program are equal in value. The term "core" should be replaced with a different name to reflect parity with the Specialization streams.

Dean's Response:

We are in full agreement with the plan above and have nothing to add at this time. We will support the department as needed, particularly around calendar and marketing changes.

Recommendation #3 (R3)

Explore opportunities to increase access to laboratory-based courses.
Department's Response and Actions to be Taken: The reviewers noted that the laboratory courses offered are very well received by students. This was largely attributed to the faculty and staff involved in designing and implementing these courses. The reviewers also noted the department's commitment to increasing our course offerings since the previous IQAP review. However, one concern is that the lab course offerings may still not be enough for the BBS programs, especially the Honours Biochemistry stream. One of the concerns was that students could design their course selection to include only one, 8-month, lab course offering. The reviewers proposed the following: **Reviewers' recommendation R3-a:** Continue to collect data from students regarding the new course offerings to assess the impact these courses have on overall curriculum and student success. **Departmental response and action R3-a:** A program-specific process to survey students at the end of each term could be implemented. This process, which can be designed in collaboration with MacPherson Institute, can capture some of the curriculum data required for the programs to assess the impact of these curricular changes on student success. This process can be incorporated as part of the student experience survey questions, or as a standalone program survey administered at the end of each term. We do note, however, that student response rates to surveys remain low and therefore the conclusions that can be drawn are often limited. **Reviewers' recommendation R3-b:** Track to see what students do after they graduate, especially students who complete their degree requirements with only the second-year lab course. **Departmental response and action R3-b**: Alumni surveys are difficult to implement because the completion rate can be extremely low. Alternatively, the establishment of a program-wide LinkedIn group could allow the program better access to alumni by communicating with them using the LinkedIn platform. This has the added advantage of "scraping" career data and other data to inform the program around "alumni success". **Reviewers' recommendation R3-c:** Increase opportunities for students to take laboratory-based courses. The reviewers did note the resource limitations to this recommendation, and that some courses simply cannot be increased in size as this would decrease the impact of the curriculum (example, Biochem 3LA3 offers a mammalian cell-based CRISPR-Cas9 module. This is an involved module that requires a lot of resources that cannot be expanded to more than 28-30 students without offering another lab section). **Departmental response and action R3-c:** The current lab space is running at capacity with labs being offered every day of the week. Additionally, many third-year lab courses (Biochem 3LA3, 3LT3, BiomedDC 3C06) include advanced techniques that offer students a more authentic lab experience.

This often requires students to spend time in the lab, outside of scheduled hours, to prepare reagents, monitor cell growth, and perform other tasks. These sessions are fully supervised by staff and the course instructor and are essential for students to understand the research process. Furthermore, these lab times train students to become more independent and to think practically about conducting research. Additionally, in the past, the lab space could house two, 3-hour, lab sessions a day. For example, one session with a start time of 9:30 am and the next with a start time of 1:30 or 2:30 pm. The university has implemented new three hour start time blocks that begin at 8:30 am, 11:30 am or 2:30 pm. Therefore, we can no longer offer two lab courses a day without additional staff and instructors working in shifts. This is because we require at least 45 minutes to set up and clean up after each lab. These time blocks have severely impacted the ability of our BBS program to offer more lab sections without increasing staff and instructor resources.

One new lab course that we offered in Winter 2024 (Biochem 3LT3) is currently being used for students in the Chemical Engineering and Bioengineering program, and Biochemistry transfer students. The first iteration of the course was small (16 students, of which 3 were Biochemistry transfer students). The course is an anti-requisite to the second-year biochemistry course; however, the course content extends past the content covered in the second-year biochemistry course and 3LT3 does have the capacity to increase in size. The anti-requisite could be removed, and the course could be added to the Biochemistry course list, thus increasing the lab course offerings.

Reviewers' recommendation R3-d: The reviewers made a long-term recommendation of encouraging the Faculty of Health Sciences to seek out additional resources for the teaching lab space to meet the increasing need for experiential learning opportunities.

Departmental response and action R3-d: Discussions with senior management in FHS regarding expansion of teaching lab space was already initiated last year by the Chair. These conversations are ongoing.

Reviewers' recommendation R3-e: The lecture-based Biochem 4C03 alternative to research-based courses offered to students is not a comparable alternative with respect to learning outcomes.

Departmental response and action R3-e: The Biochemistry 4C03 capstone course needs to be redesigned to better align the course outcomes with the thesis-based course outcomes. One recommendation by the reviewers was to design some team-based research experiences. Perhaps this course could be based on team-based research experiences. The course itself could focus student teams on project development and implementation, critical analysis of data, etc. The Undergraduate curriculum committee will explore these options.

Dean's Response:

R3a: We support this approach. The Office of the Vice-Dean Education will also reach out to other groups to understand how they have increased student survey response rates; and bring the discussion to the Health Sciences Education Council and Undergraduate Education Committee as this is a potential issue across programs.

R3b: See R1b.

R3c: We will bring this issue to UGC for further discussion.

R3d: We support ongoing discussions regarding expansion of existing lab space for undergraduate learners as well as other potential solutions for expanding opportunities as discussed elsewhere throughout this response.

R3e: We support the proposed approach.

Recommendation #4 (R4)

Establish and conduct an annual teaching and learning review session at the end of every academic year.

Department's Response and Actions to be Taken

Reviewers' recommendation R4-a: The reviewers lauded the innovative teaching occurring in the BBS programs. One point they noted from their student discussions is a showcase of student work that can occur at the end of each year. This would allow students to highlight their coursework. Additionally, this type of event could be used as a recruitment event for incoming students, especially if the showcase was open to other members on campus.

Departmental response and action R4-a: The department already hosts three major academic and research-focused symposia each year. The BBS department hosts the BDC ENGAGE showcase for the BDC program at the end of each academic year. The BBS undergraduate office hosts the BBS/BDC thesis presentation day at the end of each academic year, and the department hosts an annual BBS Research Symposium that highlights research being done by students, postdocs, and staff in the department. These events already serve as a catalyst for showcasing our departmental achievements on both the BBS/BDC websites and in our annual BiochemRocks magazine.

Reviewers' recommendation R4-b: The reviewers highlighted the amount of creativity and innovative teaching practices implemented by the BBS faculty in their course design. They also saw a real interest in faculty and staff to share these experiences with one another. As such, the reviewers recommend setting up annual teaching and learning workshops to engage faculty/staff/teaching assistants in the learning process.

Departmental response and action R4-b: The BBS department does hold a teaching retreat every other year. This frequency appears to be a good balance between ideation of new ideas, sharing resources, and financial considerations of hosting retreats on a more frequent basis. At any time, anyone is free to bring new ideas to the attention of the Undergraduate Curriculum Committee, or other program leads, as appropriate. The Chair and Associate Chair, Undergraduate Education will reinforce this messaging to the department members.

Dean's Response:

We agree with the department's responses and plan to continue with the status quo around these recommendations.

Recommendation #5 (R5)

Implement a more structured and coordinated approach to research lab placements for both Level III and Level IV (and provide the departmental resources).

Department's Response and Actions to be Taken

Reviewers' recommendation R5-a: The reviewers were impressed with the staff and faculty supporting the BBS programs and the care taken to teach students in the laboratory space. They also commended the departmental investment in the laboratory, noting the quality of equipment, and supplies. However, the reviewers contrasted this with the system adopted for research lab placements, observing a deliberate hands-off approach to give students the experience of independently securing a position.
While they understood the program's reasoning for this approach, they noted that it has led to significant stress and anxiety among many students. The reviewers acknowledged the intent to provide a real-life experience but expressed concerns that the resulting stress and anxiety could create an inequitable system for lab placements. They recognized that a fully structured process might undermine the goal of real-life experience and would be unfeasible given current resources. Therefore, the reviewers proposed a few alternatives for consideration, which are highlighted below:

- Provide students with a timeline for project placement with specific deadlines for each type of research/thesis course.
- Engage faculty by asking them to provide lab availabilities, a project summary, expectations, etc.
- The BBS office coordinate the process by using a form to gauge student interest in these courses, their interest in the different labs, etc.
- Provide a more formal guideline for timelines and interviews.
- Consider a facilitated matching process

The reviewers did note that formalizing any part of this process will require additional departmental or Faculty of Health Sciences support.

Departmental response and action R5-a: Over the years, the department has experimented with essentially every idea proposed by the reviewers.

Throughout the years the BBS undergraduate office has implemented several strategies to formalize the research and thesis course placement process. These strategies were designed to accommodate the growing number of research (Biochem 3A03, 3R03, 3R06) and thesis (Biochem 4Z03, 4F09, 4T15, BiomedDC 4A15) course offerings. The aim was to balance the growing experiential learning courses with the needs of our students and the faculty supervisors. Of note, in 2015 the undergraduate office

implemented a structured placement process with the goal of alleviating student stress and confusion when applying for the research/thesis courses. The secondary aim was to decrease the faculty time commitment, and stress, dealing with the large volume of emails they receive regarding thesis placements. Unfortunately, this structured approach was not successful. Despite the formality of the process, many students continued to email faculty asking for thesis placements, and many faculty (especially faculty outside the BBS department) continued to interview students and offer placements outside of the structured process. The result is that this process, which was extremely resource intensive, ended up causing more stress for students who were adhering to the process. Additionally, this process became inequitable in its implementation.
Although we regularly consider new ways to approach thesis placement matching, we do not feel our current process is fundamentally flawed. Students are fully placed, and we have few to no issues each year regarding the placements.

Reviewers' recommendation R5-b: the reviewers highlighted that the demand for experiential learning opportunities, like research opportunities, is growing at all university levels. This has led to both student and faculty stress and anxiety. One recommendation by the reviewers is to have faculty members track which program each of their research/thesis students is enrolled in. To make this process more formal this could be a requirement added to the annual Record of Activities. The data could be used during the educational retreats to further discuss departmental expectations around prioritizing student lab placements.

The reviewers also proposed some creative add-ons to this recommendation, especially to address the increasing demand in these experiential learning opportunities. These include team-based research projects, pairing third- and fourth-year students on projects, providing summaries of past research projects, etc.

Departmental response and action R5-b: The program of enrollment for thesis students is already tracked on the annual Record of Activities form and the Chair and Associate Chair, Undergraduate Education strongly encourage faculty members to prioritize BBS students in their thesis selection decisions. Ultimately, however, the decision on who to bring into one's lab is at the discretion of the PI based on several criteria. The curriculum committee could explore the other suggestions mentioned in the report.

Dean's Response:

We acknowledge in both the reviewers' recommendations and the department's response the very challenging nature of these issues. We are satisfied that the department will continue to explore this as it evolves over time.

Recommendation #6 (R6)

Faculty of Health Sciences to perform an accessibility audit of the teaching laboratory space, with the minimal goal of including an accessible workstation.
Department's Response and Actions to be Taken: **Reviewers' recommendation R6:** The reviewers suggested that the Faculty of Health Sciences conduct an audit of the current BBS undergraduate teaching lab space to evaluate its ability to accommodate students with accessibility differences. **Departmental response and action R6:** The FHS underwent a climate survey of all faculty and staff in the FHS approximately 2 years ago. One of the observations of that audit was concern about the accessibility of lab spaces. The BBS undergraduate office will work with others in the FHS to participate in an already-proposed audit of the accessibility of lab spaces in the FHS and the ongoing planning around accessibility for any newly designed lab spaces. This audit will be undertaken in coordination with the Offices of the FHS Vice Dean, Education and the Chief Administrative Officer.
Dean's Response: The Office of the Vice-Dean Education will work with others in the FHS to begin to design the proposed audit.

Recommendation #7 (R7)

Establish an undergraduate executive committee to oversee the curriculum and make evidence-informed decisions.
Department's Response and Actions to be Taken **Reviewers' recommendation R7:** The reviewers highlighted the effective system of governance for the BBS undergraduate program; however, they pointed out that no official undergraduate executive committee currently exists to support the Associate Chair of undergraduate education in the running of the BBS programs. This executive committee would provide strategic and operational support and enable the Associate Chair to represent multiple informed perspectives on educational matters. The reviewers further suggested that the executive committee, chaired by the Associate Chair of undergraduate education, include both teaching- and research- stream faculty, meet regularly, and provide insight on educational matters that arise throughout the academic term. **Departmental response and action R7:** This comment was surprising because such a committee already exists. The BBS Undergraduate Curriculum committee is chaired by the Associate Chair,

Undergraduate Education, has both research and teaching-stream faculty involvement, and meets regularly to support the educational aspects of the program.
Dean's Response: No additional activities required at this time. We support the department's work in this regard.

Recommendation #8 (R8)

Identify a physical space for students to build community.
Department's Response and Actions to be Taken **Reviewers' recommendation R8:** The reviewers noted the strong sense of community within the BBS program, which they considered a major strength of the program. They specifically emphasized the support the BBS department provides to the student societies. However, they noted one area of improvement - that could be explored by the Faculty of Health Sciences - which focuses on providing the BBS student societies with a physical space for meetings, storing event supplies, etc. The reviewers proposed exploring potential locations, including the current society space (HSC 1A8F), which is currently underutilized mainly due to a cost barrier. **Departmental response and action R8:** This recommendation is outside the scope of the department. The Offices of the Vice-Dean Education and the Chief Administrative Officer of the FHS are working on the development of additional undergraduate student space. This will be space open to all undergraduate learners, however, it will enable the repurposing of some space in the current HSC 1A8 area for student society space. The Vice-Dean's office has also been working more closely with Student Societies and will continue to explore options to support Student Societies with issues such as storage and meeting spaces.
Dean's Response: As mentioned, faculty leaders will continue work on student space, including for student societies, and will consult with education program leads through established mechanisms (see R3a).

Recommendation #9 (R9)

Explore mechanisms for cross-faculty (F. HSc/F.Sci) cooperation with respect to Level I to Level II transitions.
Department's Response and Actions to be Taken **Reviewers' recommendation R9:** The reviewers suggested a more collaborative working environment between the Faculty of Health Sciences and Faculty of Science. In particular, the reviewers highlighted the following areas for collaboration: 1. in-person recruitment events (partnership between the two faculties with respect to sharing information booths) 2. web based – include links to both faculties and programs offered by each faculty. 3. gateway program listings – the BBS programs should be listed as an option for Level I Faculty of Science Students. The reviewers outlined the benefits of cross-faculty collaborations to the university, and to the students in the different faculties who benefit with being informed about their program choices. **Departmental response and action R9:** The leadership team in the Faculty of Health Sciences continue to seek ways to improve communication and collaboration with all other Faculties on campus.
Dean's Response: The Executive Vice-Dean (FHS) and the Vice-Dean Education are undertaking quarterly meetings with the analogous leadership in the Faculty of Science to discuss matters of concern and mutual collaboration. These issues have been raised at a recent discussion and will continue to be discussed as appropriate. As mentioned, this is work that is ongoing across all faculties, but this particular strategy has been initiated in response to the concerns noted in the IQAP reviewers' report, albeit, prior to the IQAP.

Implementation Plan

Summary of the Reviewers' Recommendations with the Department's and Dean's Responses

R1 - Implement a formal oversight mechanism dedicated to equity, diversity, and inclusion (EDI) as it pertains to teaching and learning.			
Recommendation Details	**Action(s) to be Taken**	**Responsibility for Leading Action** (specify the role(s) that will be responsible for each action item e.g. Program Chair.)	**Timeline for Completing Action** (indicate specific timelines (e.g. not 'ongoing') for action)
R1-a: establishing a formalized departmental EDI structure that oversees efficient implementation of EDI principles in the program curriculum.	Engage with the FHS Office of Equity of Inclusion (Saroo Sharda, Associate Dean Equity and Inclusion) and begin talks to understand how to implement a more formalized EDI structure. This could result in a departmental EDI committee, or this component could be added as a portfolio item for existing committees.	BBS undergraduate associate chair and undergraduate office	**Sept 2024 – Sept 2026** The two-year timeline will allow us to liaise with the FHS Office of Equity and Inclusion, and discuss the action plan with the BBS department members (BBS departmental retreat) and the BBS undergraduate curriculum committee.
R1-b: implementation of a system to track student metrics as they progress through the programs. Metrics include demographics, research opportunities, post graduation, etc.	Our BBS program does collect research/thesis course data and will continue in this practice moving forward. We do not collect demographic data at the departmental level as it does not impact the program selection process (Level II), which is GPA based. Some demographic data is collected at the faculty level, and we can bring this point	BBS undergraduate associate chair and undergraduate office	**Sept 2024 – Sept 2026** The two-year timeline will allow us to liaise with the FHS Office of Equity and Inclusion, and also discuss the action plan with the BBS department members (BBS departmental retreat) and the BBS undergraduate curriculum committee.

	up in our discussions with the FHS Office of Equity and Inclusion. We will discuss the discuss the possibility of setting up a BBS LinkedIn group.		
R1-c: improving the setup of student-society run events like the "meet the profs" night**.**	None. The student societies already consider ways to maximize participation to the best of their abilities.	Not applicable	**Not applicable**

R2 - Reframe the narrative about the third-year research requirement to reduce student anxiety and prevent decision-making based on perceived constraints.

Recommendation Details	Action(s) to be Taken	Responsibility for Leading Action	Timeline for Completing Action
R2-a: Changing the narrative to combat student perception of Level III Research Specialization research course requirements for degree completion.	The narrative needs to be changed to showcase the Biochem 3LA3 course as the main requirement with "Biochem 3R06 or 3A03" as alternatives. • A change in the course calendar: 3 units of Biochem 3LA3 with a note specifying that 3A03/3R06 are allowable substitutes. • A change in the narrative when advising students about the different level III program offerings.	BBS undergraduate associate chair and undergraduate office	**Bullet point 1: June 2024-Sept 2025** Course calendar changes require time to implement. Changes need to be approved by various undergraduate committees at different levels of university governance. **Bullet point 2: June 2024 – Sept 2025** The change in narrative can be implemented immediately and requires a full academic year to thread the narrative across the entire BBS program
R2-b: Changing the narrative around the perception that not securing a 3rd year research course lab placement will negatively impact the success of securing a 4th year lab placement.	Shift the narrative to transparency and clarity when informing students about the various research opportunities in the BBS program. Effort must be placed to highlight the main message of this narrative, which is that not taking a third-	BBS undergraduate office	**June 2024 – Sept 2025** The change in narrative can be implemented immediately and requires a full academic year to thread the narrative across the entire BBS program

	year research course does not hinder the chances of securing a fourth-year thesis.		
R2-c: Shifting the narrative around the unintended perception that the different BBS Level III programs are not equally valuable, as suggested by statements like "drop down into the core program."	A clear message needs be communicated emphasizing that all departmental program offerings are equally valuable. The term "core" needs to be removed from the messaging and each BBS program offering needs to be addressed by the official program name.	BBS undergraduate office	**June 2024 – Sept 2025** The change in narrative can be implemented immediately and requires a full academic year to thread the narrative across the entire BBS program
R3 - Explore opportunities to increase access to laboratory-based courses.			
Recommendation Details	**Action(s) to be Taken**	**Responsibility for Leading Action**	**Timeline for Completing Action**
R3-a: Continue to collect data from students regarding the new course offerings.	Design a program-specific process to survey students at the end of each term in collaboration with MacPherson Institute. This process can be incorporated as part of the student experience survey questions, or as a standalone program survey administered at the end of each term.	BBS undergraduate associate chair and BBS undergraduate curriculum committee	**Sept 2024 – Sept 2026** The two-year timeline will allow us to liaise with MacPherson Institute, and also discuss the action plan with the BBS department members (BBS departmental retreat) and the BBS undergraduate curriculum committee.
R3-b: Track to see what students do after they graduate**.**	Explore establishing a program-wide LinkedIn group.	BBS undergraduate office	**June 2024 – Sept 2025** Explore the feasibility of setting up a LinkedIn group for all undergraduate BBS students by discussing with the BDC program, and other programs that currently use this system to track alumni.
R3-c: Increase opportunities for students to take laboratory-based courses.	Explore ways to increase opportunities for students to take laboratory-based courses.	BBS undergraduate associate chair and BBS	**Sept 2024 – Sept 2026**

R3-d: long-term recommendation – encourage the Faculty of Health Sciences to seek out additional resources for the teaching lab space to meet the increasing need for experiential learning opportunities.		undergraduate curriculum committee	The two-year timeline will allow us to discuss creative ways to increase lab-based course opportunities for students. Discussions with the BBS department and FHS need to be initiated.
R3-e: Restructure the Biochem 4C03, lecture based, course alternative to thesis-based courses.	Review the Biochemistry 4C03 capstone course as regards to course outcome alignment with the thesis-based courses.	BBS undergraduate associate chair and BBS undergraduate curriculum committee	**Sept 2024 – Sept 2027** The three-year timeline will allow us to discuss the redesign of this capstone course with the BBS undergraduate curriculum committee, the BBS department at an educational retreat, and allow time for the course instructor to redesign the course.

R4 - Establish and conduct an annual teaching and learning review session at the end of every academic year.

Recommendation Details	Action(s) to be Taken	Responsibility for Leading Action	Timeline for Completing Action
R4-a: Establish of a BBS undergraduate showcase featuring student work at the end of each academic year.	None. We already host 3 main feature events each year related to this recommendation.	Not applicable	Not applicable
R4-b: Set up an annual teaching and learning workshops to engage faculty/staff/teaching assistants in the learning process.	None. The BBS department holds a teaching retreat every other year. Financial constraints limit more frequent large gatherings of faculty currently.	Not applicable	Not applicable

R5 - Implement a more structured and coordinated approach to research lab placements for both Level III and Level IV (and provide the departmental resources).

Recommendation Details	Action(s) to be Taken	Responsibility for Leading Action	Timeline for Completing Action

R5-a: Implement a more structured and coordinated approach to research lab placements.	None. The current system has arisen after years of experimenting with different options as suggested in the report.	Not applicable	Not applicable
R5-b: Implement a system for faculty to track the program each of their research/thesis students are enrolled in.	None. We already track program enrollment in CVs and Record of Activities forms and convey to our members the importance of prioritizing students in our programs who require a thesis placement as a degree requirement.	Not applicable	Not applicable

R6 - Faculty of Health Sciences to perform an accessibility audit of the teaching laboratory space, with the minimal goal of including an accessible workstation.

Recommendation Details	Action(s) to be Taken	Responsibility for Leading Action	Timeline for Completing Action
FHS to perform an accessibility audit of the teaching laboratory space.	Liaise with the FHS Vice Dean, Education, to schedule the audit and discuss next steps.	Vice-Dean, Education; Executive Vice-Dean; Chief Administrative Officer; Associate Dean, Equity & Inclusion	Fall 2025

R7 - Establish an undergraduate executive committee to oversee the curriculum and make evidence-informed decisions.

Recommendation Details	Action(s) to be Taken	Responsibility for Leading Action	Timeline for Completing Action
Establish an undergraduate executive committee to provide strategic and operational support and enable the Associate Chair to represent multiple informed perspectives on educational matters.	None. This type of committee already exists within the portfolio of the Associate Chair, Undergraduate Education.	Not applicable	**Not applicable**

R8 - Identify a physical space for students to build community.			
Recommendation Details	**Action(s) to be Taken**	**Responsibility for Leading Action**	**Timeline for Completing Action**
Explore potential physical spaces for BBS student societies to use as their homebase.	Liaise with the Faculty of Health Sciences to explore a new (or renovated) student society space.	Associate Chair, Undergraduate Education; Vice-Dean, Education; Chief Administrative Officer	June 2025
R9 - Explore mechanisms for cross-faculty (F. HSc/F.Sci) cooperation with respect to Level I to Level II transitions.			
Recommendation Details	**Action(s) to be Taken**	**Responsibility for Leading Action**	**Timeline for Completing Action**
Improve FHS/FSci cross-faculty cooperation and collaboration, specifically around recruitment from Level I.	Liaise with the Faculty of Health Sciences to explore ways to improve cross-faculty cooperation and collaboration	Executive Vice-Dean; Vice-Dean, Education; Chair BBS; Associate Chair, Undergraduate Education, BBS	Ongoing

Quality Assurance Committee Recommendation:

McMaster's Quality Assurance Committee (QAC) reviewed the above documentation at the September 19, 2024, meeting. The committee recommends that the **Honours Biochemistry undergraduate** program should follow the regular course of action with an 18-month progress report and subsequent full external cyclical review to be conducted no later than eight years after the start of the last review.