UNIVERSITY OF NORTHERN BRITISH COLUMBIA

External Review of Degree Program(s) Report **January 2025**

Chemistry

B.Sc. Chemistry

B.Sc. Chemistry (Honours)

Joint Degree in Chemistry and Computer Science

Joint Degree in Chemistry and Mathematics

Joint Degree in Chemistry and Physics

M.Sc. Chemistry

Faculty of Science and Engineering

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PART 1 - EXECUTIVE SUMMARY

The Executive Summary will be made publicly available on the Provost's website.

ACADEMIC ADMINISTRATIVE UNIT: Faculty of Science and Engineering

DEGREE PROGRAMS UNDER REVIEW: B.Sc. Chemistry, B.Sc. Chemistry (Honours), Joint Degree in Chemistry and Computer Science, Joint Degree in Chemistry and Mathematics, Joint Degree in Chemistry and Physics, M.Sc. Chemistry

CHAIR: Todd Whitcombe

DATE OF DEGREE PROGRAMS REVIEW: October 2024

DATE OF THE PREVIOUS DEGREE PROGRAMS REVIEW: 2018

INTERNAL RESOURCE PERSON: Jennifer Sumner, FSE Administrative Coordinator

REVIEWERS

Reviewer 1 - John Sorensen
Professor
University of Manitoba
Winnipeg, Manitoba

Reviewer 2 - Alex Brown
Professor
University of Alberta
Edmonton, AB

Reviewer 3 – Brent Murray
Professor
University of Northern BC
Prince George, BC

I. SUMMARY OF THE EXTERNAL REVIEW OF DEGREE PROGRAMS PROCESS

The Site Visit Team (SVT) evaluated the Undergraduate and Graduate Degree Programs in the Department of Chemistry at the University of Northern BC. This site visit took place over two days on October 28th and 29th 2024. The SVT would like to thank the members of the Department and the University for the open and frank discussions, the detailed documentation, and for the opportunity to learn about the programs.

The SVT was provided the opportunity to meet with individuals covering all aspects of the Chemistry program from the senior university leadership team (Dean, Deborah Roberts; Interim VP Academic & Provost, Bill Owens; VP Research & Innovation, Paula Wood-Adams; and Interim AVP - Indigenous, Penina Harding) to faculty (Dr. K. Morgan, Dr. C. Lee, Dr. T. Whitcombe, Dr. M. Mandy, Dr. K. Reimer, and Dr. A. Gorelle) and staff (senior lab instructors Dr. K. Fadock and Dr. U. Parshotam) in the department. The SVT also appreciated meeting those staff in positions supporting students within the programs, i.e., J. Bowen, Access Coordinator, and K. Saunderson, Learning Specialist - Sci/Math Academic Success Centre. Meeting

with the other Faculty of Science and Engineering Chairs (Dr. D. Ryan, Mathematics & Statistics; Dr. S. Hossain, Computer Science; Dr. M. Dziedzic, Engineering; and Dr. J. Hyndman (Acting Chair), Physics), including those from the departments involved in joint degree programs, was very beneficial. Finally, the SVT was provided time to meet current students in both the BSc and MSc programs; these students did not represent all programs under review but they provided useful insight into the programming and departmental/university supports. The SVT was also provided with the opportunity to tour the physical infrastructure of the Department (e.g, typical lecture halls, undergraduate laboratories, the NUCLEUS) and the wider university campus (e.g., library, Academic Success Centre, First Nations Centre).

II. SUMMARY OF FINDINGS

The SVT was, in general, impressed with the breadth and depth of the undergraduate programs in the Department of Chemistry, including of the joint programs with Computer Science, Mathematics, and Physics. The SVT also appreciated the quality of the infrastructure (lecture halls including Information technology and audio-visual components; laboratories including equipment) related to undergraduate education; please see comments and recommendations regarding graduate education. We could not identify any areas of major concern but do have some recommendations outlined below (see Section III for a summary and Section VII for more details) that we feel would strengthen the programs and ensure their long-term success. The SVT also has cautious optimism about the thesis-based graduate MSc program at UNBC and, in particular, feel the recent new hires (Drs. Morgan and Walsh) will strengthen the research programs in the department. The SVT has made some specific recommendations below for the graduate program in the Department of Chemistry that will ensure the program meets the needs of graduate students in both the near- and long-term.

Major Strengths of the Degree Programs

The Chemistry BSc degrees (Honours and Major) have the same foundational courses in chemistry (General Chemistry, Analytical, Inorganic, Organic, Physical, and Biochemistry) as well as complementary science courses in Mathematics (Calculus I and II, Linear Algebra, plus one of Calculus III or Statistics), Physics, and Computer Science. These programs diverge in third-year primarily based on GPA, not course requirements, and the honours thesis. Importantly, the broad lecture requirements are supported by complementary laboratories, where students receive hands-on training. The joint programs (in Mathematics, Computer Science, or Physics) all contain the same breadth requirements across chemistry disciplines (except for biochemistry) within the first two years, along with the corresponding requirements in the relevant joint disciplines. In the last two years of all three joint programs, students balance studies across both chemistry and the joint discipline. The breadth of foundational chemistry training (General Chemistry, Analytical, Inorganic, Organic, Physical) across all programs is a major strength. Moreover, the chemistry programs (Honours and Major) also achieve depth, including through advanced laboratory training, and as such should seek Canadian Society of Chemistry accreditation (Recommendation #1) to advertise immediately this strength to current and prospective students, senior UNBC administration, and external entities. Due to the lack of the biochemistry requirement and, perhaps, enough chemistry lab hours through senior requirements, the joint programs are most likely not eligible for accreditation but this should not be seen as a weakness in these interdisciplinary programs; many similar interdisciplinary programs across Canada are also not accredited. In addition to the strengths of the programs themselves, the student supports, e.g, NUCLEUS, Access Resource Centre (ARC), and Academic Success Centre (ASC),

play critical roles in student academic, personal, and professional success and these areas/programs need to be maintained (see Recommendations #5 and #18).

According to the calendar, two different MSc programs are offered: a thesis-based program and a course-based program. The primary differences between these programs are the course requirements (more required in the course-based MSc) and the research depth (more required for the thesis-based MSc). The major strength of the MSc programs is the mentorship and research options provided through the available faculty members.

Significant Areas of Weakness or In Need of Further Development

Within the BSc programs, a number of potential improvements could lead to even stronger degrees and student development, see recommendations. On paper, and as noted above, the course requirements for the degrees lead to a strong foundational knowledge of chemistry, as well as further depth in chemistry via the Honours and Majors programs or depth (although perhaps not as deep within chemistry) and breadth within the joint programs. However, one concern noted by the students was that courses were not offered on regular schedules, including annual scheduling (every year or alternate years) and also changing day/time slots each year. This unpredictable scheduling makes degree planning, especially for those in the joint programs, extremely challenging, if not, impossible. Thus, one recommendation (Recommendation #2) is to regularize scheduling, where core courses are offered at standardized day/time slots each year, and, as far as possible, multi-year scheduling is made possible by offering core, but smaller enrollment, senior classes on fixed bi-annual schedules (including possible day/time slots). Several areas related to experiential learning for undergraduate students could be further developed or enhanced including (i) development of a faculty-member led capstone project/thesis to replace CHEM 406 and 407 (Recommendation #3), (ii) restarting of the institutional co-op program (Recommendation #4), and (iii) further support of additional research opportunities for undergraduate students such as NSERC-USRAs (Recommendation #6).

For the MSc program, the same concerns regarding course scheduling and availability of courses were raised by the students and thus there is a similar recommendation (Recommendation #9) to regularize graduate course offerings. This scheduling and offerings are complicated by the fact that many of the (current) MSc students are UNBC undergraduate alumni thus limiting the availability of potential graduate courses and/or providing additional workload for faculty members to offer reading courses within their research area. Moreover, given these challenges with graduate course offerings, both the utility and viability of the course-based MSc seems concerning, and thus the recommendation to focus on the thesis-based MSc program (Recommendation #7). Connected with a focus on the thesis-based MSc, we recommend any development of a PhD program should be approached with caution (Recommendation #8).

Finally, to maintain the strength of the BSc programs as well as continue to build the strength of the MSc degree, a strategic hiring plan should be developed (Recommendation #12), which aligns with Departmental and Institutional priorities (Recommendations #15 and #16). This hiring plan is especially crucial given the current faculty complement. Also, as new faculty are being, and will be, hired, development of onboarding and mentorship for incoming faculty members is critically needed (Recommendation #13). Coupled with this recommendation is the need to ensure adequate research space (Recommendation #10) for new faculty hires to support both undergraduate experiential learning, a vibrant graduate program, and to provide research competitiveness externally to comparable institutions. Finally, as the programs look to the future, the Scholarly Activity and Productivity document

should be updated to reflect the goals and objectives of the Department, Faculty, and Institution (Recommendation #14).

Comments of the Future Direction of the Degree Programs

The SVT was optimistic for the future of the B.Sc. program and are of the opinion that it provides solid preparation for permanent employment, for professional degrees, and for graduate studies within the discipline or more broadly.. As stated in Recommendation #1, the SVT strongly recommends that the Department apply for CSC accreditation for the Honours and Majors programs as a validation of the effort that has been put in to develop and support these programs. However, beyond this recommendation, the SVT found few areas of significant concern in the undergraduate program and are of the opinion that it has a solid foundation for the coming years. That said, a number of other recommendations (Recommendations #2 to #6) have been made which may enhance and strengthen the undergraduate programs in the near future.

The SVT also has some optimism about the future of the graduate program in the Department with suggestions for the Masters program (Recommendations #7, #9, and #11) and a caution for the doctoral program (Recommendation #8). As further elaborated below, the SVT strongly recommends the Department focus on the thesis-based Masters program and eliminate the course-based option. This change would bring the graduate program in the Department more in line with other Canadian chemistry graduate programs and make the Masters students more competitive for employment or further doctoral studies. The SVT strongly recommends that the Department launch a doctoral program with caution (see Recommendation #8). The SVT recommends that the Department ensure that they have enough infrastructure, resources (e.g, faculty time, funding, consumables,...), and graduate courses (including around professional development) available to make the doctoral graduates competitive in the search for employment or postdoctoral fellowships. The first step in this process is to build a strong, thriving thesis-based MSc program from which a future doctoral program could, if desired, be launched.

Faculty renewal, including decisions on how that is best accomplished with departmental and institutional goals in mind (Recommendations #10, #12, #15, and #16) as well as onboarding and mentorship to ensure new faculty success (Recommendations #13 and #14), will be an important element in guiding the future direction of the degree programs.

III. SUMMARY OF THE REVIEWERS' RECOMMENDATIONS

RECOMMENDATIONS	DESCRIPTION OF THE RECOMMENDATION
	Undergraduate Programming
One (1)	*The Department should apply for Canadian Society of Chemistry (CSC) Accreditation for Honours and Major programs*
Two (2)	*Regularize academic scheduling for courses*
Three (3)	*Create a faculty-member supervised capstone project/thesis to replace CHEM 406 and CHEM 407*
Four (4)	*Re-start the institutional co-op program*
Five (5)	*Restore NUCLEUS center to old configurations*
Six (6)	*The Department should support NSERC-USRA and other research opportunities*
	Graduate Program
Seven (7)	*Focus exclusively on the thesis-based Masters program, i.e., consider discontinuation of the course-based Masters program*
Eight (8)	*Develop a Ph.D. program with caution*
Nine (9)	*Regularize academic scheduling for graduate courses, including coordination with other academic units, if applicable*
Ten (10)	*Ensure adequate research space and infrastructure for new faculty hires*
Eleven (11)	*Establish a minimum graduate student stipend*
	Faculty and Staff
Twelve (12)	*The Department should develop a strategic hiring plan*
Thirteen (13)	*Develop onboarding and mentorship programs for new faculty members*
Fourteen (14)	*Update the Scholarly Activity and Productivity Document to reflect accurately Institutional and Department priorities with respect to teaching, research, and service*
	Department Comments
Fifteen (15)	*Develop a Departmental research focus*
Sixteen (16)	*Link department priorities within teaching, research, and service to the institutional strategic plan [and the department strategic hiring plan (#12) and department research focus (#15)]*
Seventeen (17)	*Continue, and expand upon, the developed EDI Initiatives and work of AVP-Indigenous*
Eighteen (18)	*Maintain the outstanding services of the ASC and ARC*

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Responses to the External Review of Degree Program(s) Report, Action Plan and Progress Reports

June 30 2025

Department of Chemistry and Biochemistry

B.Sc. Chemistry

B.Sc. Chemistry (Honours)

B.Sc. Joint Chemistry and Computer Science

B.Sc. Joint Chemistry and Mathematics

B.Sc. Joint Chemistry and Physics

M.Sc. Chemistry

Faculty of Science and Engineering

Chair: Dr. Todd Whitcombe
Dean: Dr. Deborah Roberts
Interim Provost and Vice President, Academic: Dr. Bill Owen
Date UNBC Received the External Review of Degree Programs Report: Jan. 2025

Please Note: The Responses to the External Review of Degree Program(s) Report, Action Plan and the 36 Month Action Plan Progress Report are made publicly available on the Provost's website.

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PART 1 – ACADEMIC ADMINISTRATIVE UNIT'S RESPONSE TO THE EXTERNAL REVIEW OF DEGREE PROGRAM(S) REPORT

(June 30, 2025)

I. Overall Impression of the Summary of Findings and Recommendations from the External Review of Degree Program Report

The Department of Chemistry and Biochemistry would like to express its thanks for the time, effort, and energy of the External Review Committee members. Below is our general response to their report.

Overall, the SVT found the program sound, covering both the breadth and depth necessary for a Chemistry degree at a Canadian University. They noted that the degree program covers the core sub-disciplines in chemistry (Analytical, Inorganic, Organic, Physical, and Biochemistry) and students are required to take at least one course in each area at the 200-level. Further, students are required to complete courses in complementary disciplines (Biology, Computer Science, Mathematics, and Physics). The joint degrees require a similar first two years (except Biochemistry) along with a balance of studies across both disciplines. The Honours degree distinguishes itself by requiring the completion of a Thesis, requiring two terms of research under the supervision of a faculty member. As such, their first recommendation is that "*The Department should apply for Canadian Society of Chemistry (CSC) Accreditation for Honours and Major programs".* While Chemistry degrees across the country are not required to be accredited – there is no provincial licensing body similar to other professional disciplines – there is a concerted effort by provincial associations to seek professional status in statute. Presently, in British Columbia, chemists have "Right to Title" (P.Chem.) only. If and when professional accreditation is achieved, chemistry departments will be required to be accredited so the Department is moving towards voluntary accreditation (see Response #1).

The SVT did note a number of areas where further development would improve the overall program and these are addressed in their Recommendations and in our Responses below. However, some of the SVT concerns echoed what they heard from the chemistry students they met with. Specifically, concerns were raised over the frequency of courses. All of the first and second year required chemistry courses are offered on an annual basis and as of September 2024, we have reinstated offering both CHEM 100 and CHEM 101 in September and January terms, while the second year organic chemistry courses are both now being offered in each semester. While the "off-semester" versions of the courses are not intended for students entering directly into a chemistry degree, they do support students in other disciplines or students opting for a January intake. Indeed, students entering in January can successfully complete all of their degree requirements in their first two years at UNBC. With regard to 300- and 400-level courses, the Chemistry Program made a decision in 1994 to offer these courses on an alternating scheme (for example, CHEM 320 and CHEM 321 are offered in even and odd years, respectively). This allows students to gain depth in any one sub-discipline, and by doubling the cohort of students in any one year, helps to generate larger class sizes. However, there remains the issue that day/time slots for courses change annually and laboratories can be scheduled during unworkable hours. These issues are addressed in several Recommendations by the SVT. Finally, as the SVT was charged with considering the graduate degrees, they recognized the role of an M.Sc. in supporting research within the department and the development of young faculty members. But they also recommended the Department should focus on the thesis-based Masters program and eliminate the course-based option, while

moving cautiously in developing a Ph.D. degree. Several recommendations speak to this view and will be addressed below.

II. Correction of Factual Errors or Areas of Misunderstanding in the Report

To the best of our knowledge, no factual errors were found.

PART 2 - ACTION PLAN

What steps does the Academic Administrative Unit intend or propose to take in response to the recommendations from the *External Review of Degree Program(s) Report*?

UNBC Responses to the External Review of Degree Program(s) Report			
1	**Recommendation**	***The Department should apply for Canadian Society of Chemistry (CSC) Accreditation for Honours and Major programs***	
	Action	**The Department is presently moving towards CSC Accreditation. The process requires the collection and collation of a significant amount of data from the past five years, including class mark distributions and averages, final and mid-term exams, assignments, and student numbers. Once the data has been obtained, it will be compiled into a submission.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair) and Dr. Kaila Fadock**	
	Target Implementation Date	**Summer 2026**	
	Implementation Details	**12 month Action Plan Progress Report**	**Documentation has been collected. Invitation has been sent requesting an accreditation visit. Data will be submitted by Fall 2025. Site visit will occur during the 2025/2026 academic year. The application process will be completed prior to the 12 month timeline and the final decision should be made by June 2026.**
		24 month Action Plan Progress Report	**Addressing any deficiencies if this initial application is not successful. If successful, begin advertising an accredited chemistry program.**
		36 month Action Plan Progress Report	**Advertise an accredited chemistry program.**
2	**Recommendation**	***Regularize academic scheduling for courses***	

	Action	**As scheduling is not within the purview of the Department, the chemistry degree has been, and will always be, a program which can be completed within a four-year time period allowing students to take three or more courses in each of the sub-disciplinary areas, with the exception of Analytical Chemistry. The Department continues to work with the Registrar's Office and scheduler to ensure no conflicts between required courses and minimum conflicts with popular elective options. The comments were partially raised because of students in the joint programs which are presently not included in the academic blocks. We will continue to provide the Registrar's Office with the information to construct appropriate academic blocks and on common scheduling issues affecting our students.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**n/a**	
	Implementation Details	**12 month Action Plan Progress Report**	**None**
		24 month Action Plan Progress Report	**None**
		36 month Action Plan Progress Report	**None**
3	**Recommendation**	*Create a faculty-member supervised capstone project/thesis to replace CHEM 406 and CHEM 407*	
	Action	**The Department will be conducting a curriculum content mapping exercise in the summer, 2025, and will revisit this recommendation.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**none**	
	Implementation Details	**12 month Action Plan Progress Report**	**The Department will be discussing the nature and structure of the capstone courses. Any changes will be implemented.**
		24 month Action Plan Progress Report	**Monitor impact of any changes made on student performance, graduation rates, and ongoing success after graduation.**
		36 month Action Plan Progress Report	**Monitor impact of any changes made on student performance, graduation rates, and ongoing success after graduation.**
4	**Recommendation**	***Re-Start the institutional co-op program***	

	Action	**While restarting the "institutional Co-op program" is beyond the ability and scope of the program, the Department to placing students in chemistry positions each semester within our region and we will invite the Co-op Director to targeted chemistry courses to discuss the Co-op program with students. We will also be taking advantage of our industrial connections to arrange meetings with the Co-op Director.**	
	Person(s) Responsible	**Entire department.**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Increase the number of Chemistry Co-op students by continuing to provide information to both our students and regional industry.**
		24 month Action Plan Progress Report	**Evaluate the number of students who have undertaken Co-op placements and determine if other actions can be taken to increase the number of Chemistry Co-op students.**
		36 month Action Plan Progress Report	**Increase the number of Chemistry Co-op students. Continue evaluation process and engage in improvements.**
5	**Recommendation**	***Restore NUCLEUS center to the old configuration***	
	Action	**While this would be something we would endorse, the room which the Nucleus previously occupied has been returned to being a computer lab (specifically for the high school robotics course) and is no longer available. We recognize that this recommendation will likely remain unactionable.**	
	Person(s) Responsible	**n/a**	
	Target Implementation Date	**n/a**	
	Implementation Details	**12 month Action Plan Progress Report**	**none**
		24 month Action Plan Progress Report	**none**
		36 month Action Plan Progress Report	**none**
6	**Recommendation**	***The Department should support NSERC-USRA and other research opportunities***	
	Action	**This is something the Department already does. With new faculty and funding, it is possible the Department will be able to obtain more student research opportunities.**	
	Person(s) Responsible	**Entire department**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Increase the number of Chemistry students receiving research funding support.**
		24 month Action Plan Progress Report	**Increase the number of Chemistry students receiving research funding support.**
		36 month Action Plan Progress Report	**Increase the number of Chemistry students receiving research funding support.**
7	**Recommendation**	***Focus exclusively on the thesis-based Masters program, i.e., consider discontinuation of the course-based Masters program***	

	Action	**The course-based Masters program is a relatively recent option with the Masters degree and resulted from the necessity of creating separate research programs with the Faculty of Science and Engineering as a result of the dissolution of the collaborative MCPMS degree. It was instituted, in part, to match the degrees being offered by other programs at the institution and it is not clear yet to what extent it will be utilized. Keeping the course based Masters as an option for students to graduate who do not fit a thesis research stream is valuable.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair) and Graduate Committee**	
	Target Implementation Date	**Ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Monitor the number of students utilizing the course-based option and for what reason.**
		24 month Action Plan Progress Report	**Monitor the number of students utilizing the course-based option and for what reason.**
		36 month Action Plan Progress Report	**Monitor the number of students utilizing the course-based option and for what reason.**
8	**Recommendation**	***Develop a Ph.D. program with caution***	
	Action	**See Provost's response**	
	Person(s) Responsible	**-**	
	Target Implementation Date	**See Provost's response**	
	Implementation Details	**12 month Action Plan Progress Report**	**-**
		24 month Action Plan Progress Report	**-**
		36 month Action Plan Progress Report	**-**
9	**Recommendation**	***Regularize academic scheduling for graduate courses, including coordination with other academic units, if applicable***	
	Action	**All 400-level courses in the sub-disciplines are cross-listed with corresponding graduate courses and offered on a regular basis. Dedicated graduate courses are dependent upon resources and offered when possible. The Chemistry and Biochemistry graduate streams do offer common courses which all students can take. And graduated courses in other disciplines are available to chemistry graduate students.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**Ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Discuss possibly developing an accelerated entry into the Master's program.**
		24 month Action Plan Progress Report	**Advertise to students and admit applicants.**
		36 month Action Plan Progress Report	**Review program success.**
10	**Recommendation**	***Ensure adequate research space and infrastructure for new hires***	

	Action	**Ongoing space for research is a pressing need across the entire campus. The Department has "lost" research space over the past few years. We will be seeking the return of space allocated to other departments and requesting additional space when and if there are new hires in the Department. Fundamental to space requests is finding suitable and compatible research programs.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Restoration of adequate and appropriate research space.**
		24 month Action Plan Progress Report	**Advocating for additional appropriate space.**
		36 month Action Plan Progress Report	**Advocating for additional appropriate space.**
11	**Recommendation**	***Establish a minimum graduate student stipend***	
	Action	**Establish a minimum benchmark for graduate stipends, in concert with University expectations and overall graduate funding, and strive to match the support model provided by NSERC and other funding agencies.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**December 2025**	
	Implementation Details	**12 month Action Plan Progress Report**	**Canvas graduate stipend funding at chemistry department across Canada. Investigate potential funding opportunities.**
		24 month Action Plan Progress Report	**Implement funding model.**
		36 month Action Plan Progress Report	**Monitor results and consequences of funding model.**
12	**Recommendation**	***The Department should develop a strategic hiring plan***	
	Action	**The SVT noted the continual need and request for the hiring of a dedicated Analytical Chemist. This has been a comment in every self-study review report from 1999 to now and remains a significant deficiency within the Department. Ideally, the Department should have at least one Analytical Chemist to complement the other sub-disciplines, particularly as most of our chemistry graduates will be employed in the discipline. We will continue to advocate for such a position.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Develop a strategic hiring plan, considering future retirements and likely funding opportunities.**
		24 month Action Plan Progress Report	**Advocate for the plan.**
		36 month Action Plan Progress Report	**Advocate for the plan.**
13	**Recommendation**	*Develop onboarding and mentorship programs for new faculty members*	

	Action	**The Department concurs with the recommendation of the SVT as more needs to be done to onboard new faculty. Within the Department, we have been working towards reduction in teaching loads, acquiring research space, facilitating instrumentation purchases, and providing comments on research proposals. However, there is more to onboarding than just these activities (i.e. establishing a research program, purchasing procedures, hiring procedures, etc.) and many outside of the scope of the Department. We will continue to advocate for a broader and more comprehensive onboarding of faculty.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair) and other Department and Faculty members**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Work with the Dean to develop a more robust on-boarding procedure.**
		24 month Action Plan Progress Report	**Implementation of new procedure when applicable. Monitoring results.**
		36 month Action Plan Progress Report	**Implementation of new procedure when applicable. Monitoring results.**
14	**Recommendation**	***Update the Scholarly Activity and Productivity Document to reflect accurately Institutional and Department priorities with respect to teaching, research, and service***	
	Action	**Document will be updated by August 2025.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**August 31, 2025**	
	Implementation Details	**12 month Action Plan Progress Report**	**Complete up-date.**
		24 month Action Plan Progress Report	**Review and modify document, if necessary.**
		36 month Action Plan Progress Report	**Review and modify document, if necessary.**
15	**Recommendation**	***Develop a Departmental research focus***	

	Action	**As noted by the SVT, the Department has moved to a focus on Natural Product Chemistry. If and when we are allocated a new faculty position or when there is a retirement, we will need to give consideration in the hiring process to supporting additional faculty members who can contribute. We will also be advocating for research chairs and faculty in other departments who may be able to work cooperatively with the faculty members in the Department on projects and research programs.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair)**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**n/a**
		24 month Action Plan Progress Report	**n/a**
		36 month Action Plan Progress Report	**n/a**
16	**Recommendation**	***Link department priorities within teaching, research, and service to the institutional strategic plan [and the department strategic hiring plan (#12) and department research focus (#15)]***	
	Action	**The Departmental priorities (educating chemists for the north and engaging in the development of natural products with northern communities) fit with all of the institutional strategic plan priorities (cultivating curiosity at both the undergraduate and graduate level, engaging with indigenous and northern communities to expand capacity with regard to natural products, to bring the knowledge and potential results to the global community). We will be monitoring our progress and moving towards enhancing our priorities as needed.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair) and all Department members.**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**Details on actions taken in support of READY**
		24 month Action Plan Progress Report	**Details on actions taken in support of READY**
		36 month Action Plan Progress Report	**Details on actions taken in support of READY**
17	**Recommendation**	***Continue, and expand upon, the developed EDI Initiatives and work of AVP-Indigenous***	

	Action	**As the Department consist of only four faculty members and two senior laboratory instructors, an EDI committee would consist of all members of the Department. EDI training is required for all members annually. Working with the AVP-Indigenous is ongoing. We will meet with the AVP-Indigenous to consider how we can better support the University's efforts in truth and reconciliation.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair) and the entire Department**	
	Target Implementation Date	**August 31, 2025**	
	Implementation Details	**12 month Action Plan Progress Report**	**Develop a plan for addressing EDI and work with the AVP-Indigenous to develop a plan with regard to truth and reconciliation.**
		24 month Action Plan Progress Report	**Implement plan.**
		36 month Action Plan Progress Report	**Monitor progress.**
18	**Recommendation**	***Maintain the outstanding services of the ASC and ARC***	
	Action	**While maintaining the services of both the ASC and ARC are outside of the purview of the Department, we recognize their value and importance to the success of UNBC. We will continue to advocate for funding these centres. And we will continuing our ongoing relationship with their programming, particularly with regard to PASS.**	
	Person(s) Responsible	**Dr. Todd Whitcombe (Chair) and the entire Department**	
	Target Implementation Date	**ongoing**	
	Implementation Details	**12 month Action Plan Progress Report**	**n/a**
		24 month Action Plan Progress Report	**n/a**
		36 month Action Plan Progress Report	**n/a**

FOLLOW UP DATES

As per the *External Review of Degree Program(s) Procedures*, the Academic Administrative Units are responsible for submitting Action Plan Progress Reports to the Dean on the following dates:

- 12 month Action Plan Progress Report: _____April 30th, 2026_____
- 24 month Action Plan Progress Report: _____April 30th, 2027_____
- 36 month Action Plan Progress Report: _____April 30th, 2028_____

PART 3 – DEAN'S AND PROVOST AND VICE PRESIDENT, ACADEMIC'S RESPONSES

I. Summary of the Degree Program Review Process

The process was well organized by the Department Chair and although there were some initial stumbles with the agenda, the visitors expressed their gratitude for the excellent treatment they received while they were here. The report written by program review team was thorough, fair and honest.

II. Dean's Response to the Recommendations and Action Plan

(June 30, 2025)

The Chair and I discussed all of the recommendations and I support the action plan.

III. Provost and Vice President, Academic's Response to the Recommendations and Action Plan

13 August 2025

Regular and comprehensive degree program reviews support the commitment of the university and its faculty and staff to the quality, accountability, sustainability, and continuous improvement of UNBC's degree programs and academic service units.

Thank you to the review committee, the department faculty, staff, and students, central administration, and the Faculty Dean for their participation in the program review for the Department of Chemistry.

I have carefully read the reviewers' report, the departmental response, and the decanal response. A meeting with the dean and chair on 20 March 2025 provided important additional context. I want to underscore the authority and responsibility of the dean and department for a large majority of the recommendations.

I broadly agree with the recommendations of the external review committee and how these recommendations have been incorporated into the departmental action plan. However, I would like to comment specifically on recommendation #8, 'to exercise caution in the development of a doctoral program in Chemistry at UNBC', a recommendation the department had accepted.

- **PhD development:** The reviewers assessed that significant financial and infrastructure resources would be needed to ensure students have a successful training environment, and that further discussion on implementing a doctoral program should be predicated on further developing and maintaining a thriving thesis-based MSc program. The PhD program proposal had received Board of Governors approval prior to receipt of the review recommendation, but the proposal has not yet been submitted to the Degree Quality Assessment Board for Ministry approval. Having discussed the review recommendation with the Dean and Program Chair, I am initiating a pause on development of this doctoral program for at least a further 2 years, and asking the department to then reassess the viability of offering a PhD in Chemistry, resubmitting the program proposal to UNBC Senate and Board should that be required. The Office of the Provost does not support further development of the Chemistry PhD concept at this time.

As is usually the case, the external review committee has made recommendations that have some degree of resource implications. Whereas I broadly support suggestions to address research space allocation, and to consider minimum graduate student stipends for example, recommendations and actions that necessitate acquiring new resources or reallocation of resources will take some time to achieve and must align with the strategic direction and goals of the department and faculty. Furthermore, in future hiring, a realistic assessment of whether UNBC can support the research infrastructure for new faculty will be paramount.

I look forward to seeing the department's work on the action plan and to hearing about the positive impact on the program.
