CYCLICAL PROGRAM REVIEW PROGRESS REPORT

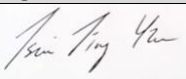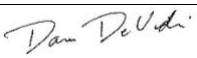UNIVERSITY OF **WATERLOO**

Program(S): Nanotechnology Engineering (BASc)

April 2025

Program information: *completed by AQUE Office*

Previous review period:	**2020-2021**	Next review period:	**2027-2028**
Final Assessment Report (FAR) Internal Approval Date:	**2/5/2024**		
Link to FAR:	[Final Assessment Report](#)[1]		

Signatures:

Please keep this document in Word version. We do require you to sign it or demonstrate your approval. If you have issues with signing a Word document, please confirm your approval by adding the following wording when you send back the document by email "I hereby approve the attached document." We will collect formal signatures at a later stage on a pdf version.

	Required	Signature	Date
Chair/Director	☐	*[signature]*	7/30/2025
AFIW Chair	☐		Click or tap to enter a date.
Dean of ENG	☐	Mary Wells	7/16/2025
Dean of SCI	☐	*[signature]*	8/7/2025
AFIW Dean	☐		Click or tap to enter a date.
AVPA	☐	*[signature]*	10/29/2025
AVPGSPA	☐		Click or tap to enter a date.

Enrollment (past three years): *completed by AQUE Office*

	Honours Co-op
2024-25 (CURRENT YR)	538
2023-24 (LAST YR)	537
2022-23 (LAST 2YRs)	524

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[1] Please note this program's FAR was approved only one year before this report was prepared, which could explain any limited progress made on the recommendations since the approval of the FAR.

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Based on Active Students Extract from Quest on May 2, 2025.

Initiatives/Developments since the Final Assessment Report

NA

Progress update on Implementation Plan

RECOMMENDATION 1: Hold faculty meetings, regularly but not overly frequently, to disseminate information as a departmental meeting would.

Completed: ☒Yes   ☐No   ☐Partially

Progress: This recommendation has been implemented. The program director delivers a 1-hour presentation with a program update one to two times per year. The topics of discussion may include, but are not limited to, co-op employment statistics, cohort enrollment data, graduate employment outcomes, program personnel changes, curriculum updates, awards, and prospective student recruitment efforts. The invited audiences include faculty members who teach NE courses, department chairs and associate chairs (ChE, CHEM, and ECE), staff, and NE lab instructors. The meetings end with a Q&A session.

Next steps (if applicable): Continue the new practice

Additional comments: NA

RECOMMENDATION 2: The NE Director makes a budget related to measurable outcomes from strategic planning.

Completed: ☒Yes   ☐No   ☐Partially

Progress: This recommendation has been implemented. It is now routine to complete the preparation of the NE budget by March. The budget includes itemized expenditures, such as coop hiring, first-year tutor hiring, lab equipment maintenance, instrument repair, lab consumables, capital equipment purchases, student social events, student awards, and etc. To assist the NE administration in understanding the distribution of expenses, lab consumable costs are listed for each individual lab course.

Next steps (if applicable): Continue the new practice

Additional comments: NA

RECOMMENDATION 3: Professors are available to teach from 8 am to 5 pm.

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Additional comments: Not selected for implementation – No action is needed for this recommendation as the instructors are already required to teach during normal business hours as defined by the University of Waterloo.

RECOMMENDATION 4: Generate hand-off document (1 page) for each course that summarizes:

a. content that students normally have problems with stated through recurring student feedback
b. examples of syllabus, midterm, and final exams
c. upload to on-line class materials, only for instructors
d. coop student hired to facilitate

Completed: ☐Yes ☐No ☒Partially

Progress:

a. The NE program organizes two student feedback meetings per term. The course instructors meet with students during the first-class representative meeting, usually scheduled ~ 1 month after the start of the term. During this meeting, students may discuss any issues related to the courses, and these discussions are documented in the meeting minutes by the academic coordinator.
b. The second-class representative meeting is typically held near the end of the term, and only the program director and the coordinator meet with the students; no course instructors were present. The students may raise any remaining course issues. These meeting minutes are recorded and available through the program's academic coordinator. With the meeting minutes now available, it is now possible to summarize the problems with NE courses, if any.
c. The Faculty of Engineering now requires all instructors to post a course outline on the online outline website. Much of the course information and syllabus are conveniently available online to students and other faculty members.
   Since the NE program instructors are mainly from Chemical Engineering, Chemistry, and Electrical and Computer Engineering, access to the course materials, such as examples of mid-term and final exams, is progressing at different rates.
d. Since the NE instructors are primarily from the three parent programs, once the course material depository system and method are completed, this item will be completed.
e. Due to financial constraints, the NE program will only hire one co-op student during the 2025 and 2026 periods. The co-op student may participate in this project if time allows.

Next steps (if applicable): Summarize the course issues from the class representative minutes and await supporting parent programs to complete the material depository system and method.

Additional comments: NA

RECOMMENDATION 5: Allow written student feedback twice per semester for all classes, regardless of year, with professor response in class.

Completed: ☒Yes   ☐No   ☐Partially

Progress: This recommendation has been implemented. We now hold class rep meetings twice a term (for 2nd year and above) for each cohort. The first meeting is scheduled with professors who teach the cohorts, usually during the first half of the term. The second class-rep meeting, usually scheduled near the end of the term, was carried out without professors present. Students only meet with the director and program coordinator. Students prefer meetings without the professors as they can express their ideas and comments more freely.

The student/instructor feedback sessions are mainly an opportunity for structured interaction between NE instructors and class representatives. The primary mechanisms for continuous quality improvement are direct communication with NE class representatives through-out the term, with the NE Associate Director Undergraduate overseeing and facilitating quality of instruction through individual discussions and meetings with NE instructors. This is in addition to periodic meetings with one or more NE class representatives for quality improvement related to student conduct, for example, lecture attendance, study skills, and other student-related aspects of the quality of the undergraduate program.

The program also has monthly meetings of the NE Undergraduate Curriculum Committee, which includes representatives of all collaborating programs and 2 student representatives. Unlike the previous quality improvement activities which focus on actual delivery of NE course content, this committee is focused on longer-term changes to the curriculum to improve quality.

Next steps (if applicable): Continue the new practice.

Additional comments: NA

RECOMMENDATION 6: Leverage Capstone and NanoDesign Day to engage industry, forming an NE advisory council that incorporates industrial and government representatives.

Completed: ☐Yes   ☒No   ☐Partially

Progress: Not yet launched. Visitors from industry frequently attend the Fourth-Year Design Project (Capstone) poster session. The poster session is open to the public, where students can meet and discuss their work with audiences from academia and industry. The NE program plans to collaborate with the Faculty of Engineering's Alumni Office to develop some of the details, such as, the council's composition, membership, length of membership, and detailed goals.

Next steps (if applicable): Discussions with the FoE alumni office to draft a plan for forming the proposed council.

Additional comments: NA

RECOMMENDATION 7: Conduct NE specific outreach (through new or existing outreach activities) to high schools to achieve EDI initiatives as well as education of high school students on NE careers/opportunities.

Completed: ☒Yes ☐No ☐Partially

Progress: The program director has visited high schools, participated in high school student programs, and attended other recruitment events. During these interactions with students, the director provided an overview of the NE program, the field of nanotechnology, statistics on the career outcomes of NE alumni, and potential future opportunities. In return, multiple high schools have organized field trips and visited the Nanotechnology Engineering Program facilities, such as the cleanroom. The NE program is developing mobile hands-on learning activities that can be taken off-site as a workshop for high school students. The NE program also produced multiple short animations to introduce the field of nanotechnology. This includes topics such as nanofabrication techniques and m-RNA vaccines. Some of them are already posted online for public viewing. The online component enables students in remote areas to access more information about the nanotechnology engineering program.

We have been working with Becca Tanouye, Nick Garcia, and Taizeen Madha at UWaterloo EDI Outreach. We have workshop and NE presentation offerings in their high school workshop catalogue. We also have workshop and NE presentation offerings in Engineering Outreach Catalogue. We have also developed a "Women in Nanotechnology Engineering" page to celebrate the women in our program and to encourage more women to apply to the program. https://uwaterloo.ca/nanotechnology-engineering/women-nanotechnology-engineering

Last May and in July of 2025 we participated in Shad Canada events at both UWaterloo and Laurier University. We did presentations about NE and facilitated a workshop. SHAD Canada attracts diverse representations of grade 10 and 11 students from across Canada. We have developed relationships with several public and private schools in this area and in the GTA which has diverse representations and have been connecting with STEM and STEAM schools to facilitate workshops and give presentations.

This year we worked with Engineering Outreach to develop a "Lab Day" Event for NE. It was advertised on our website and in the Engineering Outreach Newsletter for anyone to sign up. We had a private international school in attendance as well as another local public high school. We also had two students attend independently.

We regularly have co-ops working on outreach activities with us. An NE co-op was tasked to complete a study of which sectors our alumni are working in which we regularly use as a recruitment tool. Parents and prospective students are very interested in which sectors our students are working in after graduation. Co-op students regularly help facilitate the workshops with us. We had several working with us for the Lab Day event. Our co-ops are also a big part of our Open House and You &Waterloo Day recruitment team. They do provide feedback about the activities.

Next steps (if applicable): Continue to develop more mobile activities that can be used as a workshop off-campus for prospective students. Invite more high schools to visit our campus as part of a field trip.

Additional comments: NA

RECOMMENDATION 8: Formalize a budget by the NE Director tied to measurable outcomes from strategic planning related to NE program operations.

Completed: ☒Yes   ☐No   ☐Partially

Progress: Itemized strategic spendings are listed on the yearly NE budget and discussed in Recommendation #2.

Next steps (if applicable): Continue implementing the new practices.

Additional comments: NA

RECOMMENDATION 9:

(a) Develop mechanism for NE leadership group to manage instructors who teach within the NE program.
(b) Provide NE Director the ability to review student evaluations of instructors.

Completed: ☒Yes   ☐No   ☐Partially

Progress: The program director, the associate chairs, and the first-year directors monitor teaching. Student evaluation scores are available via the Teaching Critique website.

Next steps (if applicable): None

Additional comments: NA

RECOMMENDATION 10: Do not require instructor consent for approved NE electives. This unnecessary barrier for students in an approved course, required for their degree, should not exist.

Additional comments: Not selected for implementation – No action is required for this item as the instructor's consent is already not required from the approved NE electives. Changing the approval process for non-NE courses will be difficult to implement because it requires a change of policy among departments and the faculty has its own policy and requirements.

RECOMMENDATION 11:

(a) Leverage CTE to build a summer course that sessionals can take to fill already known knowledge gaps that sessionals have and have the host department require sessionals to pass it prior to hiring as a sessional.
(b) More experienced TAs should be assigned to sessionals or new course instructors.

Completed: ☐Yes   ☐No   ☐Partially

Progress: None

Next steps (if applicable): None

Additional comments: 11(a) was not selected for implementation – Sessional instructors are organizing a union at the University of Waterloo. Any change in the hiring requirement for sessional instructors will require collective bargaining between the UW and the union.

11(b) was not selected for implementation – This item status has changed from "ongoing" to "not selected for implementation" because of the hiring practice changes and collective bargaining considerations in the past year. TA assignment is organized by the parent departments (Chemical Engineering, Electrical and Computer Engineering, and Chemistry). Each has its own hiring practices and union considerations.

RECOMMENDATION 12: Develop, with admissions, an inclusive pathway to ensure students with nonstandard backgrounds can pursue higher education in a way that maintains the rigor of the Engineering degree. A potential solution is a preliminary year of tailored studies where standard courses could be offered to fill knowledge gaps and prepare these students for a 1st year application process where they will be competitive.

Additional comments: Not selected for implementation – A potential solution is a preliminary year of tailored studies where standard courses could be offered to fill knowledge gaps and prepare these students for a 1st year application process where they will be competitive. The

FoE does not have a pathway for students with non-standard backgrounds. The NE program will follow this faculty policy.

University Level Recommendations

RECOMMENDATION 13: Follow up with NE Director after 1 year to verify why some recommendations were not executed.

Completed: ☐Yes   ☐No   ☒Partially

Progress: The Final Assessment Report for this program was approved in February 2024. This progress report is the follow up on the progress of the implementation plan. The Senate Academic Quality Enhancement (AQuE) Committee will review the actions taken to date and determine whether the program's current progress is on track as outlined in the Final Assessment Report.

Next steps (if applicable): Senate AQuE committee will review the report.

RECOMMENDATION 14: Support counseling and accessibility services to respond to the significant increase in student need.

Completed: ☒Yes   ☐No   ☐Partially

Progress: As noted in the Final Assessment Report:

Dean of Engineering's Response: We continue to provide new ways of improving the well-being of all of our engineering students and have adjusted our Associate Dean's portfolio related to teaching to also include student experience. We have also provided additional resources and have hired well-being officers across the Faculty of Engineering.

Dean of Science's Response: The Faculty of Science is adjusting our Associate Dean roles to ensure greater support to students. The new and adjusted Associate Dean (AD) roles are AD for a Diverse, Inclusive and Safe Science, and AD for Faculty and Student Engagement. The AD changes and the Future of Science strategic planning process being initiated in the Faculty of Science will lead to new supports and resources for students.

The following numbers are generic to University of Waterloo.

Overall 5586 students in total were registered with Accessibility Services (AAS). Of these 4880 are undergraduate students, 279 are master level, 152 are doctoral students, and the remaining 275 are diploma or non-degree students.

Of the 5586 students, 3783 actively used and utilized their accommodation plan during that time period.

Term by term this broke down as follows. I have included the instructional headcount of students taking an academic term to get the percent of student with accommodations.

	S24	F24	W25
Students with Accommodations	1523	2666	2477
Total UW Headcount Academic	19287	38858	30607
Percent of all students utilizing accommodations	8%	7%	8%

Next steps (if applicable): N/A

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	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
1.	Hold faculty meetings, regularly but not overly frequently, to disseminate information as a departmental meeting would.	The Program Director will arrange town-hall meetings for each team.	Program Director	Executed – Program director delivers ~ 1 hr program update ~ 2 times/ year.
2.	The NE Director makes a budget related to measurable outcomes from strategic planning.	The program director will prepare a proposed program budget by Feb with inputs from the NE executive committee members. The committee should complete and approve the final version of the program budget before March 1 of each year.	Program Director and Executive Committee	It is now a routine process to complete the budget by March.
3.	Professors are available to teach from 8 am to 5 pm.	Not selected for implementation	NA	NA
4.	Generate hand-off document (1 pg) for each course that summarizes: a. content that students normally have problems with stated through recurring student feedback b. examples of syllabus, midterm, and final exams c. upload to on-line class materials, only for instructors d. coop student hired to facilitate	The NE course outlines are requested during the first week of each term and posted online for the public after receiving consent from individual faculty. It is not mandatory for the faculty to give consent to the public posting of the outline. In the future, the NE Program Coordinator will request access to all	Program Coordinator	The Faculty of Engineering now requires all courses to post an outline online. Much of the information is conveniently available online. Access to LEARN by designated staff is available.

		NE courses on LEARN so teaching materials may be available for those who teach the course in the future.		
5.	Allow written student feedback twice per semester for all classes, regardless of year, with professor.	The NE program will increase the number of class representative meetings from one to two per term.	Program Coordinator	We now have class rep meetings twice a term (2nd year and up). The first meeting was with professors, while the second was without professors present.
6.	Leverage Capstone and NanoDesign Day to engage industry, forming an NE advisory council that incorporates industrial and government representatives.	This is an excellent recommendation and could be achieved.	NE Associate Director	Not yet officially launched. FYDP is a public event, and industrial representatives do attend.
7.	Conduct NE specific outreach (through new or existing outreach activities) to high schools to achieve EDI initiatives as well as education of high school students on NE careers/opportunities.	The NE Associate Director will coordinate the high school outreach activities with the Associate Dean's Outreach Office to educate high school students about nanotechnology careers and opportunities.	NE Director	The program director has made multiple visits to high schools and recruited students. Multiple high schools visited the Nanotechnology Engineering Program in return.
8.	Formalize a budget by the NE Director tied to measurable outcomes from strategic planning related to NE program operations.	This recommendation links to "Program level recommendation #1".	Program Director and Executive Committee	Itemized strategic spending was listed on the budget.
9a.	Develop mechanism for NE leadership group to manage instructors who teach within the NE program.	The NE Director or their designate will work with Department Associate Chairs to oversee instructors of courses within the NE program.	NE Director and Department Associate Chairs	Ongoing
9b.	Provide NE Director the ability to review student evaluations of instructors.	Associate Dean, Teaching & Student Experience will grant access to student evaluations of courses within the NE program to	Associate Dean, Teaching & Student Experience	Student evaluation score is available via Teaching Critique web site.

		the NE Director or their designate.		
10.	Do not require instructor consent for approved NE electives. This unnecessary barrier for students in an approved course, required for their degree, should not exist.	Not selected for implementation	NA	NA
11a.	Leverage CTE to build a summer course that sessionals can take to fill already known knowledge gaps that sessionals have and have the host department require sessionals to pass it prior to hiring as a sessional.		NA	NA
11b.	More experienced TAs should be assigned to sessionals or new course instructors.	Not selected for implementation	NA	NA
12.	Develop, with admissions, an inclusive pathway to ensure students with non-standard backgrounds can pursue higher education in a way that maintains the rigor of the Engineering degree. A potential solution is a preliminary year of tailored studies where standard courses could be offered to fill knowledge gaps and prepare these students for a 1st year application process where they will be competitive.	Not selected for implementation	NA	NA

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for monitoring the Implementation Plan.