UTQAP Cyclical Review: Final Assessment Report and Implementation Plan

1 Review Summary

Program(s) Reviewed:	Bachelor of Applied Science in Engineering Science, with majors in: • Aerospace Engineering • Biomedical Systems Engineering • Electrical & Computer Engineering • Energy Systems Engineering • Engineering Mathematics, Statistics and Finance • Engineering Physics • Machine Intelligence • Robotics Engineering
Unit Reviewed:	Division of Engineering Science
Commissioning Officer:	Dean, Faculty of Applied Science and Engineering
Reviewers (Name, Affiliation):	• Dr. Rosalind Archer, Professor and Head, School of Engineering and Built Environment, Griffith University • Dr. Scott Moura, Associate Professor and Chair, Engineering Science, University of California, Berkeley • Dr. James Olson, Professor and Dean, Faculty of Applied Science, University of British Columbia • Dr. Bill Rosehart, Professor and Dean, Schulich School of Engineering, University of Calgary
Date of Review Visit:	October 16-17, 2023
Review Report Received by VPAP:	July 31, 2024
Administrative Response(s) Received by VPAP:	March 20, 2025
Date Reported to AP&P:	April 10, 2025

Previous UTQAP Review

Date:

Summary of Findings and Recommendations

Significant Program Strengths

- Flagship program that is challenging, rigorous and attractive to highly qualified students
- Program structure, with a broad base in engineering during the first two Foundation years, creates engineers with interdisciplinary understanding
- Excellent outcomes for graduates • Supportive and enthusiastic leadership, associated faculty, and staff
- Valuable ties to alumni and the involvement of a strong Advisory Board have led to enhanced opportunities for student mentorship and employment

Opportunities for Program Enhancement

- Adding a hands-on design course to the third year to enable the continuous development of design skills and capability
- Engaging with the Department of Mathematics in the Faculty of Arts & Science to ensure ongoing support for the program
- Monitoring students' stress levels given the challenging nature of the program
- Reflecting on how recruitment strategies might be broadened to attract a distinctive incoming cohort beyond high grades as indicators of achievement
- Pursuing new philanthropic opportunities and continuing to strengthen ties with alumni to build on program strengths

Current Review: Documentation and Consultation

Documentation Provided to Reviewers

Terms of reference; self-study, including faculty curricula vitae; previous review report (2015-2016), including the administrative response; recommendations from previous Canadian Engineering Accreditation Board (CEAB) review (2019); access to undergraduate course descriptions (e.g., academic calendar); Faculty academic plan, annual impact reports, and Dean's presentation on the Faculty; and University of Toronto Quality Assurance Process (UTQAP).

Consultation Process

Faculty with teaching and/or administrative responsibilities in the Division of Engineering Science; Engineering Science students, administrative staff and senior program administrators; and members of relevant cognate units as determined by the commissioning officer.

Current Review: Findings and Recommendations

1. Undergraduate Program(s)

Unless otherwise noted, all bulleted comments apply to all programs reviewed.

The reviewers observed the following **strengths:**

- Overall quality
  - Engineering Science (EngSci) is a flagship undergraduate program at the Faculty of Applied Science and Engineering
  - One of U of T's largest undergraduate engineering programs
- Admissions requirements
  - EngSci's reputation [attracts] some of the strongest high school students from across Canada and beyond
- Curriculum and program delivery
  - The broad introduction to fundamentals of engineering science and math in the first and second years of the program is a notable strength
- Student engagement, experience and program support services
  - EngSci students form a tight knit and supportive community, and also often pursue leadership and co-curricular activities
  - "The Engineering Science Research Opportunities Program is outstanding"

The reviewers identified the following **areas of concern**:

- Curriculum and program delivery
  - Due to the curriculum's fixed structure, there are very few pathways for students to complete requirements in years one and two
- Student engagement, experience and program support services
  - Students report finding the number of courses, and intensity of individual courses quite challenging, both academically and personally

The reviewers made the following **recommendations**:

- Curriculum and program delivery
  - Some reflection on the simultaneous depth of topics covered in the first and second years of the program should be considered; revise and reduce materials and/or courses where appropriate
  - Consider replacing mandatory courses with a limited selection of elective options in the program's second year
  - Enhance program flexibility, particularly in the first and second years: "Alternative options, such as spring/summer offerings, can help alleviate pressure. Explore broader use of course equivalents in spring / summer terms."

  - Explore opportunities to add engineering disciplinary components in first and second year courses, with an eye to encouraging greater student engagement
  - Explore establishing criteria for when an EngSci major might be considered for transition to a 'CORE-8' program; reviewers note this might be considered when the breadth or depth of foundational materials may not be achievable, given the learning outcomes of the other majors
  - Consider developing more formal mechanisms to enable students to transfer from EngSci to 'CORE-8' programs after Year 2, to increase program flexibility
  - Consider increasing the rotation of instructors assigned to teach EngSci courses (while remaining mindful of potential risks if the rotation is too rapid)
- Accessibility and diversity
  - Consider monitoring the performance of students from a range of equity-deserving groups, such as first-generation university students
- Student engagement, experience and program support services
  - Conduct a detailed analysis of EngSci student retention, and explore approaches for improvements
  - Consider adding evening student advising opportunities
  - Explore approaches to help students better understand potential EngSci majors and options earlier in their programs
  - Explore increasing opportunities for upper year EngSci Students to
  - connect with potential 4th year thesis supervisors
  - "Explicitly encourage and facilitate student mobility through international exchange Programs"
- Student funding

  Consider increasing funding for students accepted into international experiences

2. Graduate Program(s) – n/a

3. Faculty/Research

The reviewers identified the following **areas of concern**:

- Faculty
  - The diversity of teaching staff delivering the program appears somewhat limited; for example, while the student cohort is approximately 40% female, they see very few women lecturers in the program

The reviewers made the following **recommendations**:

- Faculty
  - Work to increase the diversity of the teaching staff contributing to program delivery

4. Administration

Note: Issues that are addressed through specific University processes and therefore considered out of scope for UTQAP reviews (e.g., individual Human Resources issues, specific health and safety concerns) are routed to proper University offices to be addressed, and are therefore not included in the Review Summary component of the Final Assessment Report and Implementation Plan.

The reviewers observed the following **strengths**:

- Relationships
  - Faculty and leadership from across FASE spoke very positively about the Engineering Science program and division
  - EngSci's connections to the various FASE units and the Department of Physics are noted as a program strength
  - Staff are outstanding, and faculty and students speak very highly of their work
- Organizational and financial structure
  - FASE units and institutes are incentivized to participate in teaching Engineering Science courses via the activity-based budget model
- Long-range planning and overall assessment
  - EngSci is an outstanding program overall, that enjoys strong support from the Dean and other FASE and U of T constituents
  - "FASE should be proud of the many great components of Engineering Science at the University of Toronto"
  - "The Engineering Science Division and the Engineering Science program is excellent. The program has a strong history, with outstanding graduates, academic leaders, faculty, staff and current students."
- International comparators
  - Students, faculty and leadership consistently regard EngSci as one of the most distinguished engineering programs nationally and internationally
  - EngSci helps to differentiate U of T Engineering from other engineering schools

The reviewers made the following **recommendations**:

- Relationships
  - Develop mechanisms to grow a broader sense of community around the EngSci program; reviewers suggest considering approaches such as allowing faculty (including those in Physics and Math) to affiliate with the program as courtesy 0% appointments
  - A stronger EngSci community and enhanced communications would help instructors to learn about connections across the entire Engineering Science curriculum
  - Develop mechanisms for the Division Director to be more directly engaged with department and institute chairs who contribute to Engineering Science
  - Continue divisional efforts to ensure that the culture in Engineering Science is inclusive

  - Enhance internal communications to allow staff to engage regularly with the division's strategy and operations
  - Include students in governance processes at the highest possible levels, such as curriculum committees for the major options, to ensure that the student voice is encouraged and valued
  - Establish an Industry and Alumni Advisory Committee for Engineering Science
- Organizational and financial structure
  - Reviewers echo faculty and staff assertions that Engineering Science should not be converted into a department, noting that it provides a special role in the Faculty of uniting community members around high quality students and curricular innovations
  - Reviewers recommend further defining the roles of the option/major chairs, including developing appointment processes for these positions, exploring approaches to enhancing their governance roles related to curriculum, and ensuring recognition for these roles in the faculty member's home departments
  - Consider developing academic curriculum committees for each of the Engineering Science majors, and committees for Years 1 and 2; members of these committees could gain useful experience for potential future leadership roles in the division
  - Review and clarify governance, committee structures and processes within the division and the majors
  - Conduct a review of job descriptions and workload expectations for EngSci staff members; outcomes might include increasing the size of the staff team, or reducing the scope of current duties as appropriate
- Long-range planning and overall assessment
  - "The Division and FASE should embrace opportunities to further enhance the program, Division structure and student experience, leveraging the knowledge and experience across FASE in engineering education and student wellness."
  - Develop a strategic academic plan for the EngSci division that brings together the 'CORE-8' and partners from across FASE, and ensures a common understanding of and vision for the program
  - Explore the possibility of each of the FASE departments and academic units developing a major within EngSci, if one does not already exist

UNIVERSITY OF TORONTO
FACULTY OF APPLIED SCIENCE & ENGINEERING

March 18, 2025

Professor Nicholas Rule
Vice-Provost, Academic Programs
University of Toronto
27 King's College Circle

Dear Professor Rule,

I write in response to your letter of November 19, 2025 regarding the October 2023 external review of the Division of Engineering Science and its undergraduate program.

On behalf of the Faculty of Applied Science & Engineering, I would first like to thank the reviewers, Professors Rosalind Archer, Griffith University; Scott Moura, University of California, Berkeley; James Olson, University of British Columbia; and Bill Rosehart, University of Calgary for their very comprehensive review of the division. I would also like to thank the Engineering Science director, faculty, administrative staff, and all those who contributed to the preparation of the self-study, as well as the many staff, students, and faculty members who met with the external reviewers and provided thoughtful feedback.

The external review process is a valuable exercise that affords us the opportunity to take stock of the state of our academic units and of the Faculty as a whole. We are extremely pleased with the reviewers' favourable comments on the division's distinguished and internationally-recognized program, and its exceptional and engaged students, outstanding staff, and strong connections with units within and outside the Faculty.

The quality of the unit and its program notwithstanding, the review report raises a number of issues and challenges. These have been addressed in the attached table, which was developed in consultation with the director of Engineering Science. For each area addressed, an implementation plan is provided that identifies actions to be accomplished in the short (six months), medium (one to two years) and longer (three to five years) terms, and who will take the lead in each area.

Comments on the draft *Final Assessment Report and Implementation Plan* (summary) were provided by my office on March 11, 2025.

I anticipate the next review of the Division of Engineering Science will be commissioned in 2026-2027 with a visit to be scheduled for 2027-2028. This will coincide with the end of the director's term.

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Chairs and directors in FASE are required to submit to me a written update on progress made toward the goals in their implementation plans on an annual basis. I will provide you with an interim report on the status of the division's implementation plans no later than 2025-2026, the mid-point between the division's last and next reviews.

I will attend the April 10, 2025 meeting of the Committee on Academic Policy & Programs along with Professor Natalie Enright Jerger, division director, to answer any questions that may arise regarding this review.

Thank you very much for the opportunity to respond to the report of the external review team. Their comments and recommendations will help inform the vision and future priorities for the Division of Engineering Science.

Sincerely,

Chris Yip
Dean

cc:
Prof. Natalie Enright Jerger, Director, Division of Engineering Science
Caroline Ziegler, FASE Governance & Programs Officer
Lachmi Singh, Director, Academic Programs, Planning & Quality Assurance
David Lock, Academic Reviews & Planning Specialist
Emma del Junco, Academic Reviews & Planning Specialist

Attachment

2023-24 UTQAP Review of the FASE Division of Engineering Science - Review Recommendations

Appended to March 18, 2025 letter from FASE Dean Chris Yip to Vice-Provost, Academic Policy & Programs, Nicholas Rule.

Please do the following for each recommendation in the table:

- If you **intend** to act on a recommendation, please provide an **Implementation Plan** identifying actions to be taken, the time frame (short, medium, long term) for each, and who will take the lead in each area. If appropriate, please identify any necessary changes in organization, policy or governance; and any resources, financial and otherwise, that will be provided, and who will provide them.
- If you **do not** intend to act on a recommendation, please briefly explain why the actions recommended have not been prioritized.
- In accordance with the UTQAP and Ontario's Quality Assurance Framework, "it is important to note that, while the external reviewers' report may include **commentary** on issues such as faculty complement and/or space requirements when related to the quality of the program under review, **recommendations** on these or any other elements that are within the purview of the university's internal budgetary decision-making processes must be tied directly to issues of program quality or sustainability" (emphasis added)
- You may wish to refer to the sample table provided by the Office of the Vice-Provost, Academic Programs

Request Prompt *verbatim from the request*	**Rec. #**	**Recommendations from Review Report** *verbatim from the review report*	**Unit Response** (February 2025)	**Dean's Response** (March 2025)
The reviewers noted concerns that the fixed structure of the EngSci curriculum results in very few pathways for students to complete first and second year requirements, and that many students report significant academic and personal challenges with the number and intensity of EngSci courses. They made several recommendations related to addressing student workload and increasing program flexibility, particularly in the first and second years; and strengthening supports for student wellness.	1.	"The broad introduction to engineering science and math fundamentals over years 1 and 2 is a strong strength of the program, although some reflection in the simultaneous depth of the different topics covered should be considered."	**Short Term:** Work with Foundation Year instructors to help them understand the entirety of the curriculum such that they can leverage material taught in other courses to remove any significant overlap and take advantage of possible synergies to increase efficiency of teaching material. **Long/Medium Term:** Do a complete review of Foundation years using a broad range of data from CEAB, University curriculum management process, surveys, etc. to determine the required depth and breadth of the foundation curriculum to meet the needs of the majors. Once this has been established, an improved curriculum that minimizes extraneous material, reduces overlap, optimizes the number and types of assessments (i.e., exams, labs, problem sets, etc.) across the required courses and distributes them equally throughout the term can be developed.	The Faculty recognizes that this has been a long-standing issue with the Division and its programming and encourages the Division to proactively address these concerns through appropriate consideration of workload and balance. The Division is taking steps to determine the required depth and breadth of the foundation curriculum to meet the needs of the majors and will address any gaps and is encouraged to reach out to the Curriculum Development Specialist in the Office of the Vice-Provost, Innovations in Undergraduate Education for support in any curriculum mapping exercises.

	2.	"The Division and FASE should embrace opportunities to further enhance the program, Division structure and student experience, leveraging the knowledge and experience across FASE in engineering education and student wellness."	**Medium Term:** Work with the First Year Office, Registrar's Office, the Engineering Career Centre, the Faculty's Institute for Studies in Transdisciplinary Engineering Education and Practice (ISTEP) as well as student groups to create a map of existing points of and opportunities for future curricular and co-curricular integration, particularly for learning supports. **Long Term:** Establish and act on key priorities for improving student experience, emphasizing student development and wellness.	The Faculty is committed to fostering a culture of care and support and strives to embed these principles into the ways we administer our programs and services. Through our Academic Plan we have made a commitment to leverage and create resources, and develop policies and procedures to support mental wellness, assist students in need and promote healthy lifestyles.
	3.	"Revise and reduce the material and/or courses taught in year 1 and year 2."	See 1 above.	See 1 above.
	4.	"Consider replacing some compulsory courses with a choice of specific courses in year 2 (e.g., choose 2 classes from a list of 3)."	**Medium/Long Term**: Explore how flexibility might be accomplished without creating new challenges for Years 3 and 4. As students choose their Major at the end of Year 2, we do not want to create barriers to students that may prevent them from being able to select any major (such as not taking a particular course choice in the Year 2 curriculum).	The Division is encouraged to consider how its foundation year curricula map to current and anticipated future majors, especially with respect to the expectations of the majors regarding preparation. As stated in 1 above, the Division is encouraged to reach out to the Curriculum Development Specialist in the Office of the Vice-Provost, Innovations in Undergraduate Education for support in any curriculum mapping exercises.
	5.	"Offer some flexibility, particularly in the first and second years. Due to the fixed structure of the required curriculum, there a very few pathways for students to complete the core curriculum in Years 1 and 2. Alternative options, such as spring/summer offerings, can help alleviate pressure. Explore broader use of course equivalents in spring / summer terms.	EngSci courses are specifically tailored to our program creating challenges with finding equivalent courses. Resources to offer additional courses as make-ups in other semesters are limited. Our academic advisors work closely with individual students to find course equivalents or develop modified plans to ensure smooth progression through the program.	The Faculty broadly is exploring alternative course scheduling opportunities including around spring and summer term as there is a broader opportunity for all programs. EngSci is encouraged to continue working with individual students to ensure smooth progression through the program.

			Medium Term: We will explore additional scheduling flexibility for the mandatory Engineering Economics course by potentially offering it in multiple semesters and by potentially creating an asynchronous/hybrid offering of the course.	The Dean's Office will work with the Division to develop proposals for any modifications to its program.
	6.	"Do a detailed analysis of retention of students in Engineering Science and consider ways to improve."	**Short Term:** Work with the First Year Office (FYO) to amend transfer form to collect information on why students are transferring out of EngSci. **Medium Term:** Use collected data to identify opportunities for improvement.	EngSci will put measures in place to analyze and address student retention. Retention is also a consequence of the recruitment to EngSci and broadly to Engineering. The Faculty will work with EngSci and the Engineering Recruitment and Outreach offices to ensure that our collective recruitment messages are appropriate and timely.
	7.	"Consider finding opportunities to add engineering disciplinary components/examples in Years 1 and 2 courses. While the program focuses on setting a strong foundational knowledge, student engagement may increase when seeing potential engineering applications."	**Short Term:** We have organized cross-course integration workshops for foundation year instructors with the aim of providing an opportunity for instructors to learn about other courses and integrate concepts/topics from other courses. We had one workshop in Fall 2024 semester, and plan to repeat the workshops at least once per semester. Moving forward, we will be more explicit on guiding the conversations towards finding opportunities to add engineering examples/applications.	The Division is encouraging foundation year instructors to integrate concepts and topics from other courses and will encourage instructors to add engineering examples and applications to their courses. The Faculty has appointed a Decanal Advisor on Innovations in Undergraduate Education who has been tasked with reviewing these issues across all programs in Engineering.
	8.	"Consider developing a more formal mechanism to allow students to transfer from EngSci to Core-8 programs after year 2 (effectively extending the program flexibility allowed for Eng Science students a second year)."	Currently, students can transfer at 3 different points in first year. Beyond first year, there are mechanisms to transfer; however, because curriculums do not match up, students will have to repeat a year of study. **Medium Term:** Work on messaging different transfer options to students so they understand pros and cons of different choices. The most popular programs (e.g., MEC/ECE) may not have space to accept	Because the curriculums in EngSci and the Core 8 programs don't align, and because there may not be space in some popular Core 8 programs, transfers for EngSci students may be limited. The Division will work with its first-year students to ensure they are making well-informed choices about transferring out of EngSci.

			students who transfer after 2nd year. We will work with these programs to provide increased opportunities for students.	
	9.	"Consider adding evening student advising opportunities in the evening (likely virtual advising).	We do not believe there is a significant need for this. Currently, there are various programming and resources available on campus after hours with some services offered 24/7 by telephone and on-line including health and wellness supports. Faculty members may choose to offer evening office hours or asynchronous support to students. The Division runs both academic and non-academic activities in the evening and/or weekend including GEARS (Guided Engineering Academics Review Sessions). **Medium Term:** Survey students to understand gaps in advising support.	EngSci believes its students are well served by the existing advising hours but will survey students to identify any gaps in advising support. The Faculty will work with EngSci to ensure that appropriate levels of student support are in place, including access to divisional level support in addition to what is provided at the unit level.
	10.	"Find ways for students to understand potential Engineering Science major/options earlier in their programs. This could include introduction to different majors and even CORE-8 programs within Engineering Science courses in first and second year.	**Medium Term:** We are currently identifying the best approaches to provide more information about the majors earlier in the program, specifically in Year 1. (Presently, we offer major selection info sessions in Winter of Year 2). Approaches under consideration include: 1. A first-year seminar course 2. Online modules 3. Panels by major chairs and/or guest speakers and year 3-4 students.	EngSci is considering additional ways in which to provide more information about its majors to first-year students. It is encouraged to work with the Vice-Dean, First Year to look at best practices as they are applied to the Track One program students who face similar challenges when they select from the Core 8 offerings.
The reviewers recommended reviewing and clarifying governance and committee structures and processes within the unit and the majors and considering further defining the roles of the option/major chairs. They also recommended exploring approaches to encouraging greater student involvement in the	11.	"Further define and develop the role of the option/major chairs – appointment process for chairs, governance role around curriculum, recognition for the role in their home Departments."	Recognition of the major chair role in home department is already covered under a MOU between EngSci and Core 8 departments. **Medium Term:** Work with department chairs to clarify the appointment process. We will work with major chairs to create governance documents around curriculum (see item 12 below).	The Division – and Faculty – recognizes and values the contributions of teaching staff who serve as EngSci major chairs. We encourage EngSci to further define and develop these roles, in particular, to clarify the appointment process with department chairs. EngSci is encouraged to look to the Core 8 programs as to how they strategically and

unit's governance processes (e.g., as curriculum committee members), to ensure that their voices are heard and valued.				proactively engage undergraduate students in curriculum development.
	12.	"Develop a mechanism for the Division Director to be more directly engaged with department and institute chairs on who is assigned to teaching Engineering Science courses, serving as major/option chairs, etc."	The existing MOU covers role and selection of Major Chairs. We will continue to work with other departments as Major Chair vacancies arise. **Short/Medium Term:** Outreach by the Director to newly hired faculty across FASE to introduce them to EngSci and encourage them to want to teach for EngSci. Work with department chairs for courses that have been challenging in the past to identify appropriate new instructors. It is impractical for the Director to play a role in the assignment of 100+ courses that are highly decentralized across multiple Departments, Institutes, and Faculties. We will focus on engaging directly with Chairs and Directors on core courses.	The Division will continue to work with department chairs in filling major chair vacancies and in identifying new instructors for EngSci core courses. We encourage the Division to consider being involved in the faculty search process within the Core 8 programs so that candidates are made aware of EngSci and how it is positioned and resourced within the Faculty.
	13.	"Launch academic curriculum committees for each of the engineering science majors, in addition to a committee for Years 1 and 2, which make recommendations to Engineering Science Curriculum Committee. Members of these committees could be potential future academic leaders within the Division."	We believe curriculum committees for each major create redundancy and too much overhead. Our current EngSci Curriculum Committee is composed of each of the eight Major Chairs, the Associate Director, Curriculum (who chairs the committee), the Associate Director for Years 1 and 2, the Director, and two-four student representatives. Staff including our academic advisors, our curriculum development officer and our program and student experience officer also sit on the committee as non-voting members. **Medium Term:** Develop guidance and governance documents on how major chairs should develop and approach curriculum changes within their major.	It is impractical for EngSci to create curriculum committees for each of its eight majors, especially since its Division-level Curriculum Committee includes representation from the majors and, more broadly, from years 1 and 2, and from students and staff. The Division is encouraged to ensure that student representation on its curriculum committee is representative of the student cohort in terms of major and also stage in program (i.e. Y1, Y2, Y3, Y4). See also recommendations 1 and 4 regarding reviewing and updating EngSci's curriculum.

			Long Term: Form a working group on revisions to the Years 1 and 2 curriculum committee. This will not be a permanent committee but will be established periodically as needed to refresh the curriculum.	
	14.	"Review and clarify the governance, committee structures and processes within the division and the majors."	**Short Term:** This process is already underway and should be completed by Sept 2025. The Associate Director, Curriculum has been working with the Leadership Team on clarifying and formalizing the governance of EngSci. To date, a document formalizing the EngSci Curriculum Committee (EngSci CC) has been developed and a document formalizing the major chairs is under development.	The Faculty encourages EngSci in its efforts to review and clarify its governance, including the EngSci Curriculum Committee.
	15.	"Include students in governance processes at the highest possible levels, e.g., curriculum committees for major options, to ensure the student voice is valued.	Students are currently included in the EngSci Curriculum Committee, which is the first committee that any curriculum changes will be brought forth to. Currently 2-4 students sit on the committee, rather than a student from each major. Four reasons for this are: (1) the committee is already large so including more students would make meetings and decisions more difficult to achieve; (2) the students on the committee are tasked with liaising with the student representatives from each major; (3) the Major Chair, the Years 3 and 4 Academic Advisor, and the Curriculum and Research Officer meet with students once per term grouped by Major where students can bring curriculum matters forward; (4) student leadership meet biannually with the Director to voice any concerns about their experiences in the program.	The Faculty's Undergraduate Curriculum Committee, a standing committee of Council, includes representation from undergraduate students. Student appointments to this (and all) Faculty Council committee are made by the Engineering Society and often includes those in Engineering Science. Likewise, there is undergraduate student representation on other standing committees that focus on academic appeals, EDI, teaching methods and resources, admissions, assessments, and scholarships and awards. Undergraduate students are also represented on FASE Council.
	16.	"Establish an Industry and Alumni Advisory Committee for Engineering Science.	**Short Term:** Develop terms of reference for board, identify and invite members to join External Advisory Board.	The Faculty encourages the Division to consult with other departments and institutes regarding best practices on their External Advisory Boards.

			Medium Term: Board will meet semi-annually to advise the Division on curriculum, industry engagement and advancement opportunities.	
The reviewers recommended developing mechanisms to grow a stronger sense of community around the EngSci program, and exploring approaches that could permit faculty, including members in relevant FAS units, to affiliate with the program more formally.	17.	"Develop mechanisms to grow a broader sense of community around the program. For example, the Division might consider allowing faculty members to affiliate with Engineering Science as 0%/courtesy appointments, to help facilitate community. An approach like this should be extended to faculty members in Physics and Math. Additionally, deeper community and communication would assist with providing instructors knowledge about the connections across the entire Engineering Science curriculum."	**Short Term:** Workshops with faculty to increase knowledge of our curriculum and learning objectives/academic goals. Faculty will be invited to an annual Divisional Meeting to be updated on the state of EngSci. **Medium Term:** Create a mechanism for faculty to receive non-budgetary cross-appointments to recognize their commitment to EngSci and their work within the Division. Creating opportunities for faculty to engage with the Division through meetings and cross-appointments will also help the Division identify candidates for future leadership roles, which can be challenging due to the limited number of faculty within the Division.	The Faculty supports the Division's plans to engage with faculty through meetings and cross-appointments, particularly with regard to succession planning. The Dean's Office can investigate mechanisms for creating non-budgetary cross-appointments that recognize faculty engagement with the Division.
The reviewers urged EngSci to continue and strengthen efforts related to Equity Diversity and Inclusion, including exploring ways to increase the diversity of teaching staff contributing to program delivery; monitoring the experience of students from equity-deserving groups; and continuing efforts to encourage and ensure an inclusive environment and culture across the unit.	18.	"Ensure greater diversity in staff lecturing in the program. For example, the student cohort are approximately 40% female, but they see few female lecturing staff in class."	Understanding how students are represented in faculty and guest speakers who deliver content in our program is already a priority for Engineering Science; however, as EngSci draws its teaching faculty from across FASE and FAS, we have limited direct control over the diversity in teaching assignments. The percentage of female faculty in FASE has been relatively constant over the last decade at 20-22% which makes it challenging to offer a significant number of classes with female lecturers. All units would like to have diverse faculty in first year courses and there are simply not enough available. Against this backdrop, in the 2024-25 Academic year, students in the Foundation Years were taught by approximately 30 lecturers, of which 10 identify as female. More specifically, in the 2F semester in recent years, 4 out of 6 courses	EngSci is to be applauded for its efforts to promote greater diversity in teaching staff who lecture in the program, particularly their idea to market teaching opportunities in EngSci to female faculty. The Division is encouraged to proactively work with the Core 8 programs during their faculty searches increase the diversity of the teaching staff and their engagement with EngSci.

			are taught by female faculty members. Female students have provided positive feedback to the Division on representation in second year courses. **Short Term:** In ESC301, a mandatory third-year Seminar course for all students, which features guest speakers invited from each of the eight Majors, a new survey instrument is being implemented this academic year (April 2025) to understand how students from each Major are represented in guest speakers. **Medium Term:** We plan to market teaching opportunities in EngSci to female faculty particularly those who have joined recently and may be less familiar with EngSci. In addition, should we go forward with plans for a Year 1 seminar course (see item 9 above), we will use this forum to ensure good diversity across many dimensions including gender, race and ethnicity.	
	19.	"The Division should consider monitoring the performance of students from a range of equity groups e.g., first-generation college students."	**Short Term:** Investigate opportunities to use newly available UofT Student Equity Census data to monitor pathways and success of students through the program. A current project is underway to collect data on EngSci student success in PEY-Coop. Based on this data collection exercise, we will expand to collect data on other aspects of student experience. **Medium Term:** A larger-scale initiative proposes to leverage existing demographic and academic success data available through diverse channels at the university to create individual de-identified student "profiles" which capture both academic factors (e.g., grades, participation in summer research or	EngSci will leverage existing demographic and academic success data within the university to better understand trends in individual pathways through its program. It will also investigate ways to leverage UofT Student Equity Census data, and data collected through the PEY Co-op Program, to monitor the performance of students across equity groups. This is also part of the Faculty's broader initiatives around student progress and supports

			internships, etc.) as well as extra-curricular factors (participation in clubs and teams, arts or community involvement, etc.) along with demographic factors to understand trends in individual pathways through our program. Creating anonymized 'profiles' for students with similar outcomes may help to illuminate gaps in supports available to students from equity-seeking groups, or common barriers to full participation in our program.	
	20.	"Continue the efforts being made by the division to ensure that the culture in the division is an inclusive environment."	**Short/Medium Term:** EngSci continues to run an EDI Working Group, in which the majority of the faculty and staff in the Division are engaged. Current initiatives from within this group include the aforementioned larger-scale demographic data initiative, as well as drafting a public statement on inclusive behaviour within community spaces to signal our commitment to creating a culture of belonging in our program. We are also actively seeking stronger ties to the EngSci Club, a discipline-based student club, to ensure that we can address issues of inclusivity within the student body as they arise. EngSci faculty and staff recently participated (July 2024) in a Responding to Disclosures training session offered by UofT's Sexual Violence Prevention and Support Centre. This was a positive learning opportunity for faculty and staff. Based on this experience, we will continue to encourage and facilitate faculty and staff participation in EDI training and open discussion of issues. We will also maintain our focus on diverse community representation in student-facing communications, such as profiling on our	The Faculty is committed to fostering an environment in which each member of our community can excel, contribute and benefit from different perspectives. Attracting students, staff, and faculty from a wide range of backgrounds, we leverage all forms of diversity to promote inclusivity and create opportunities to experience working collaboratively across cultures. Committees, groups and offices at the Faculty level that promote EDI include the Inclusivity, Diversity & Equity Advisory Committee (a standing committee of Council); the Black Inclusion Steering Committee; the Eagles Longhouse lndigenous Initiatives Steering Committee, the Engineering Equity, Diversity, and Inclusion Action Group; and the Office of Diversity, Inclusion and Professionalism.

			communication channels a diverse group of students who have participated in summer research opportunities.	
The reviewers broadly recommended that the Division of Engineering Science engage in a strategic planning process and develop an academic plan that unites the 'Core-8' Engineering programs and partners from across FASE to ensure a common understanding of the mission of and vision for the EngSci program. In considering potential future directions for the unit, they echoed faculty and staff assertions that EngSci should maintain its status as an extra-departmental unit; they also urged unit and Faculty leadership to engage in strategic assessment and planning related to the structure of the Engineering Science majors.	21.	"Develop an academic strategic plan for the Eng Sci division that brings together the CORE-8 and Institutional partners across FASE to ensure a common understanding and vision for the program."	**Short Term:** Consultations with other FASE Chairs and Directors are underway. We are discussing their current level of engagement with EngSci and opportunities for future engagement. **Medium Term:** Based on consultations with Chairs and Directors and our External Advisory Board (see item 15 above) coupled with the current FASE Academic Planning exercise that is underway, we will develop an academic strategic plan to guide EngSci over the next 5 years.	It is expected that the Faculty's next academic plan will be completed in 2024-2025. The Division is encouraged to consult with our Vice-Dean, Strategy as they embark on academic strategic planning.
	22.	"Plan an ongoing internal communications process to allow a wide community of staff to engage regularly with the division's strategy and operations."	**Short Term/complete:** Create an MS Team "EngSci Instructor Hub" for all faculty and staff involved in the program (launched summer 2024); post timely info, best practices, program updates, etc. in the hub (ongoing); in late summer host annual "academic year kickoff" event open to all instructors (launched Aug 2024); host/facilitate focused discussions once per semester on topics of interest to instructors (launched fall 2024 with workshop on cross-course integration in foundation years); provide all new instructors with "onboarding" document to introduce them to our unique program (launched summer 2024); build community through periodic social events for instructors (launched Dec 2024). **Medium Term:** Create an annually updated EngSci Instructor Handbook (draft almost final); implement a detailed communication plan through the hub (draft in progress); host biennial seminar for new U of T Engineering	The Division is encouraged to look at the Core 8 programs to see how to best manage and optimize the impact of international communications efforts.

			faculty members to explain our program and create interest in being an instructor in it; facilitate training sessions for EngSci instructors on topics like responding to disclosures of sexual violence. **Long Term:** Leverage community building and communications to create a succession plan for leadership including identifying new Major Chairs and new Associate Directors.	
	23.	"Should Engineering Science be converted into a department? In our assessment, no. This conclusion is shared by the faculty members and staff. Engineering Science provides a special role of uniting the Faculty around high quality students and innovations in curriculum. Moreover, departments and institutes are incentivized to participate in teaching Engineering Science courses via the activity-based budget model."	No action needed. We will continue to operate under our current EDU:B designation.	We support the recommendation of both the external reviewers and EngSci that it should not be converted into a department. It does have a unique model; however, that model does need some refinement to reflect current trends and opportunities.
	24.	"Consider setting criteria when an Engineering Science Major may be considered for [transition] to a CORE-8 program (example: Biomedical Engineering). This could include when the breath/depth of foundation material may not be [reasonably] possible to achieve given the learning outcome of the other majors."	Related to item 20 above. **Medium Term:** Establishing a shared vision for EngSci among other FASE departments and institutes will help establish criteria for when to transition a Major into a Core 8 program or when to morph a major into a FASE minor. **Long Term:** Determine the long-term viability of the Biomedical Systems Engineering Major when juxtaposed against the theoretical core BME undergraduate program that is being considered. Work with ECE to determine if maintaining EngSci ECE is an appropriate use of resources alongside Core 8 ECE. Distinctive offerings for EngSci students are a hallmark of our program.	EngSci's majors are intended to be flexible offerings that respond to accelerated, discipline-specific learning and evolve to keep pace with emerging technologies and engineering research areas. With input from other academic units in FASE, the Division will establish criteria for when to transition a major into a Core 8 program, or when to transition a major into a FASE minor.
	25.	"Try to ensure each of the FASE departments and academic units have a major within Engineering Science."	It is not necessarily the goal of EngSci to have a major for each FASE department.	EngSci is exploring ways in which other FASE units can participate in existing majors

			Medium Term: Identify additional ways for FASE departments to get involved in existing majors including updating course offerings. For example, courses across the Faculty in Machine Learning have grown, and expertise beyond ECE and MIE should be brought into the Machine Intelligence (MI) Major. A curriculum review of the MI Major is underway with recommendations expected in the next 2 months. These recommendations will be acted upon in the next 12 months based on current governance cycles. Our next major to be reviewed is Energy Systems; we want to ensure that broad efforts around Energy and Sustainability across FASE are being captured in the curriculum and learning objectives of the Major. Finally, a proposal for a new major in Transportation Systems Engineering is under development. Led by the Department of Civil and Mineral Engineering (CivMin); this will boost the involvement of CivMin in EngSci which dwindled when the Infrastructure Major was closed. **Long Term:** Establish a shared vision for EngSci among FASE departments. See item 20.	through course offerings. The Division also develops new majors in collaboration with other departments, such as the proposed Transportation Systems Engineering major (with CivMin), which is targeted for a September 2026 launch. The Division is encouraged to work closely and proactively with the Cross-Disciplinary Programs office as there are parallels and complementarities that could be leveraged especially with respect to EngSci majors that do not necessarily fit within a single department. Ensuring that all departments in FASE are engaged in Engineering Science initiatives will be key. It would be useful for EngSci to develop a curricular map / infographic that illustrates how each department contributes to the different majors and also to the foundation year programs.
The reviewers recommended conducting a review of job profiles and workload for Engineering Science administrative staff, to ensure that the unit and its staff are appropriately resourced and supported.	26.	“Conduct a review of the job profiles and workload expectations for Engineering Science staff members. This could potentially include increasing the size of the staff teams or reducing the scope of current overall duties for the team.”	**Short Term:** Review job descriptions for all EngSci staff with FASE HR. The goals are to streamline work processes, ensure job descriptions are up-to-date and reflective of staff’s current responsibilities and duties, and continue to provide relevant skills training and professional development activities to staff members.	The Faculty’s Chief Administrative Officer and its Human Resources Office are available to provide advice and guidance with staffing requirements and job descriptions. EngSci is encouraged to work with the CAO and Human Resources to ensure they maintain the proper staffing levels and fully utilize

			Medium Term: Re-align job responsibilities to ensure efficient use of resources and identify needs to grow our staff such as in upper-year advising. Ensure that we are properly leveraging shared services through the Dean's office and from the University's central services to maximize the efficiency of the EngSci team.	Dean's Office shared services to maximize efficiencies within the Faculty.
Other recommendations:	27.	"The Engineering Science Research Opportunities Program is outstanding. Consider increasing the relative funds provided to students accepted to an international experience."	We recognize that the level of funding for international placements has not kept up with the rising costs of travel and living expenses. **Short Term:** We are increasing the level of funding from $3500 to $4500 this year. **Long Term:** We are working to seek external funding support for ESROP Global. We now work with Mitacs for an additional $4000 per placement for eligible countries. We are working with Advancement for more sustainable long-term funding for ESROP Global, targeting 50 placements per year.	The Faculty has broadly been focused on bring in support for international experiences and this will hopefully increase engagement of our students in these programs. EngSci is encouraged to continue to work with the Faculty's Office of Engineering Advancement regarding sustainable long-term funding for students accepted to an international experience. The Division is also encouraged to work with MITACS to develop a focused MOU that describes a multi-year commitment of funding for Globalink Research Awards, both in-bound and out-bound.
	28.	"Explicitly encourage and facilitate student mobility through international exchange programs."	Student mobility during the academic year remains a challenge. As our curriculum and majors do not map well to traditional engineering departments and curriculum, it can be difficult for students to find appropriate course substitutions when going abroad. A term abroad can often mean a student must extend their time to degree. **Medium Term:** Identify key academic partner institutions that offer course pathways sufficient for exchange. We will message and market these opportunities to students.	The Faculty has appointed a Decanal Advisor on Innovations in Undergraduate Education. A key element of their portfolio is working with international partners to develop focused offerings that address curricular challenges across all of FASE's offerings.

	29.	“Consider increasing opportunities for upper year Engineering Science Students to connect with potential 4th year thesis supervisors.”	We continue to enhance our process for encouraging, soliciting, and promoting thesis research opportunities from teaching and research stream professors throughout the University of Toronto. **Short Term:** Calls for research opportunities are published strategically throughout the year, and their publication aligns with key points in the student's thesis project search. Faculty course coordinators will be available year-round to support students in their search. **Medium Term:** While existing videos guide students on engaging potential supervisors, we aim to create a broader asynchronous resource that outlines how to start early and provides a typical timeline for securing supervision. As noted in item 11 above, we will be doing outreach to new FASE faculty to share EngSci opportunities with them. This will include making them aware of EngSci thesis opportunities and the process for getting involved.	EngSci is enhancing its processes regarding research opportunities. This includes encouraging, soliciting, and promoting thesis research opportunities from teaching and research stream professors; making faculty course coordinators available to students year-round; and creating a broad asynchronous resource that outlines how to start early and provides a typical timeline for securing supervision. EngSci will also share EngSci opportunities with new FASE faculty and make them aware of thesis opportunities.
	30.	“Increase rotation in who is assigned to teach engineering science courses; however, this needs to be balanced with some risk if the rotation is too rapid.”	**Short Term:** On-going discussions with departments who staff our courses to identify opportunities for new instructors to teach for EngSci. Work with Joint Area Committees that oversee Inter-Divisional Teaching to ensure teaching needs and rotation are being properly considered. **Medium Term:** Identify courses that could benefit from a rotation of instructors to avoid having instructors stay long-term in a single course.	EngSci is taking steps to increase rotation in teaching assignments, from both within and outside of the Faculty. The Faculty recognizes the benefit in rotating teaching assignments and opportunities across all programs and departments.

3 Committee on Academic Policy & Programs (AP&P) Findings

The spokesperson for the reading group reported that the review summary accurately described the full review and that overall, they found the review highlighted the many strengths of the program, as well as areas for improvement. The group noted the program's academic rigour and reputation, strong alumni engagement, interdisciplinary structure, and supportive student community. The reading group reported that the Dean's administrative response had adequately addressed issues identified by the review, but requested more clarity regarding the first and second year curriculum challenges with the materials, hiring practices related to faculty and teaching rotation planning, and concerns related to Equity, Diversity & Inclusion ("EDI") measured outcomes.

Dean Chris Yip responded that regarding engagement and hiring practices, EngSci sourced from cognate departments, as many of the core faculty members were appointed in other departments, emphasizing a cross collaboration between units.

Natalie Enright Jerger, Director, Division of Engineering Science added that it was by design that they drew their teaching faculty from across FASE, and FAS, noting that it was a strength of the program. They had strong relationships with Department Chairs in the Faculty to discuss any issues around teaching rotations in a timely fashion. As a faculty member with The Edward S. Rogers Sr. Department of Electrical & Computer Engineering ("ECE"), she was engaged in that faculty's hiring process as appropriate and would explore additional formal mechanisms. They were reviewing EDI both in teaching staff and students, and were doing well in relation to diversity in FASE teaching staff overall. In terms of students, they were measuring outcomes of student retention, years to completion, student success in the Professional Experience Year Co-op Program ("PEY Co-op"), and other post-graduate opportunities.

No follow-up report was requested.

4 Institutional Executive Summary

The reviewers praised Engineering Science (EngSci) as a flagship undergraduate program at the Faculty, and one of the most distinguished engineering programs both nationally and internationally. The program's reputation attracts exceptional students from Canada and beyond; its tight-knit community of students often pursue leadership and co-curricular activities; and the Engineering Science Research Opportunities Program is noted as exceptional. FASE community members and leadership speak very highly of the program and unit, and the Faculty's departments and institutes are incentivized to participate in delivering EngSci courses via the activity-based budget model. Finally, EngSci's connections to various FASE units as well as the FAS Department of Physics are highlighted as a considerable program strength; and faculty and students praise the contributions of unit staff as outstanding.

The reviewers recommended that the following issues be addressed: addressing student workload and increasing program flexibility, particularly in the first and second years; and strengthening supports for student wellness; reviewing and clarifying governance and committee structures and processes within the unit and the majors, and considering further defining the roles of the option/major chairs; exploring approaches to encouraging greater student involvement in the unit's governance processes; continuing and strengthening efforts related to Equity Diversity and Inclusion; developing mechanisms to grow a stronger sense of community around the EngSci program, and exploring approaches that could permit faculty to more formally affiliate with the program; engaging in a strategic planning process and develop an academic plan that unites the 'Core-8' Engineering programs and partners from across FASE to ensure a common understanding of the mission of and vision for the EngSci program; and conducting a review of job profiles and workload for Engineering Science administrative staff.

The Dean's Administrative Response describes the Faculty and division's responses to the reviewers' recommendations, including an implementation plan for any changes necessary as a result.

5 Monitoring and Date of Next Review

Chairs and directors are required to submit a written update on progress made toward the goals in their implementation plans to the Dean each year. The Dean will provide an interim report to the Vice-Provost, Academic Programs on the status of the implementation plans midway between the 2023-2024 review and the year of the next site visit.

The next review will be commissioned in 2026-2027 with a visit to be scheduled for 2027-2028.

6 Distribution

On August 15th 2025, the Final Assessment Report and Implementation Plan was posted to the Vice-Provost, Academic Programs website and the link provided by email to the Dean of the Faculty of Applied Science and Engineering, the Secretaries of AP&P, Academic Board and Governing Council, and the Ontario Universities Council on Quality Assurance. The Dean provided the link to division leadership.