Update on Unit Response to External Reviewers' Report & Action Plan
Programs Being Reviewed: Undergraduate program in Sustainable and Renewable Energy Engineering (streams A and B)
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Approved by Dean: Larry Kostiuk August 26, 2024

Note: This document is made available for public posting on the Vice-Provost's website.

***** Denotes items that SQAPC would like the unit to pay particular attention to based on their past review of the original action item**

External Reviewer Recommendation & Categorization	Action Item	Owner	Progress Update	Have calendar changes been initiated or completed (Not applicable/Yes/No), if Yes, when
1. Ensure the programs are properly resourced to ensure their perennity in current form and their possible growth, both in terms of faculty numbers and teaching space. (Concern)	*The program is managed by both the Department of Electronics (DOE) and the Department of Mechanical and Aerospace Engineering (MAAE). Faculty numbers and teaching space have been made available to support the program.* *Two new faculty members were hired in MAAE in the area (Prof. Kristen Schell and Prof. Ahmed Abdulla) on top of Prof. Jean Duquette. Another CRC position will be advertised soon. One new faculty member (Prof. Himavarsha Dhulipati) in a related area will join DOE in 2022.* *Additional space for the program will become available in 2022 (EDC, Engineering Design Centre, Building) and 2025 (SRC, Sustainable Research Centre, Building).*	*Chairs*	*Recent hires have integrated well, very active in the program EDC space has helped, but it is insufficient. SRC space did not happen (cancelled). Space is still a concern for all programs in engineering.*	*N*

2. Promote and increase the visibility of the programs and its graduates to potential students an employers- highlight the skills and know how it graduates to showcase their value to employers in the sustainable and renewable energy sector. (Concern)	*Engage with upper administration regarding advertisement (radio, cinemas, magazines, digital advertising, updating SREE website, etc.) and outreach (high schools in Ottawa and GTA, Fall high school outreach event at Carleton, and annual Ontario university outreach event) more proactively. Profs. Ahmed Abdulla, Kristen Schell, and Jean Duquette are currently developing an updated interactive slide presentation for these events (to be used for in-person events and posted online with text or narration). Another possibility is to target engaging sustainable energy speakers (outside of Carleton, e.g., professional contacts or alumni) for the general 1st year ECOR 1055 course. To increase the visibility of the program to employers, we have engaged the MAE Industrial Advisory Board. The IAB includes Andrew Penner, a director at BGIS and active member of the BEIC (https://beic.ca/), Charles Zaloum,* Engineering Supervisor, Conservation and Demand Management, Hydro Ottawa Ltd and Paula Murthy, Senior Associate and Discipline Lead for the Mechanical Team – Stantec Ottawa Buildings. These contacts and their network will be an important resource in connecting with employers.	*Chairs SREEB Curriculum Chair SREEA Curriculum Chair*	SREE faculty have attended the Ontario Universities' Fair; delivered lectures to high school students at events organized by Carleton (e.g., SHAD 2024); conducted interviews for FED and University Communications to promote SREE; filmed videos and helped develop animations promoting the program; and served as judges at middle school, high school, and undergraduate design competitions (e.g., Virtual Ventures and Engineers Without Borders).	*N*

	no additional resources are required - we are engaging existing resources, such as the FED outreach are recruitment team and our IAB.			
3. Work to provide more interdisciplinary sustainable energy capstone project opportunities for SREE students, especially externally sponsored. (Concern)	*There are already sustainable energy capstone project opportunities.* *Strive to create a new combined sustainable energy capstone project ECOR4907.*	*Chairs* *MAAE Capstone Project Coordinator*	*New ECOR4907 project being developed by Jean Duquette and Shichao Liu for fall 2025*	*Y*
4. Integrate SREE related Advisory Board members to help with curriculum development and strategic governance of the programs. (Opportunity)	*Make sure that during the meetings with Advisory Board members, curriculum and strategic governance of the programs are discussed.*	*Chairs*	*Curriculum is often discussed with AB members. .* This will take place during the 2024-25 academic year.	*N*
5. Development of more SREE targeted final year electives. (Opportunity)	*Department Chairs to discuss the possible implementation of additional 4th-year elective courses.* -This will happen as a result of recent hires in both MAE and DOE who are related to the sustainable energy area. They are developing elective courses that will be suitable for SREE students (as well as students in other programs in MAE and DOE).	*Chairs*	*This is still under consideration. .* This will take place during the 2024-25 academic year, with a final decision by summer, 2025.	*N*
6. Introduce elements of data science to mirror evolution seen in the industry. (Opportunity)	*The SREEB curriculum committee agrees that introducing data science elements into the program would be a valuable addition. This can be achieved in the following ways:* *- implementation of a new Capstone project (e.g., learning and applying new Python models related to sustainable energy).*	*SREEB Curriculum Chair* *SREEA Curriculum Chair*	*This is still under consideration. .* This will take place during the 2024-25 academic year, with a final decision by summer, 2025.	*Y*

	- Providing a new course in data science at the department level. *Introduce and apply data science analysis methods in existing SREE courses (as students would need to learn these tools, each course could only include a couple of methods at most).* ** Prof. Kristen Schell has expressed interest in the first two bullet points (i.e., new capstone and new course) due to her relevant background.*			
7. Stream A only - Review the sequencing of electromechanical energy conversion courses. (Opportunity)	*Content of courses in the context of the program will be reviewed by Department curriculum committee and reported to the SREE program governance committee with calendar changes, if necessary, prepared for submission in fall 2022.*	*Chair*	We believe that the sequencing is ok based on the following review: ELEC 2602 requires basic knowledge of electromagnetic induction and magnetic energy storage as taught in the prerequisite course PHYS 1004. Other magnetic principles such as the cause and effects of magnetic hysteresis, and basic magnetic circuit analysis are taught in ELEC 2602. Detailed analysis of electric fields due to charge distributions, magnetic fields due to current distributions, time-varying fields leading to Maxwell's Equations are taught in the third-year course ELEC 3105 and are not necessary for understanding the material in ELEC 2602.	*N*