

**CARLETON UNIVERSITY COMMITTEE ON  
QUALITY ASSURANCE**  
**Cyclical Review of the Bachelor of Information Technology in Optical Systems and Sensors  
Executive Summary and Final Assessment Report**

This Executive Summary and Final Assessment Report of the cyclical review of Carleton's Bachelor of Information Technology in Optical Systems and Sensors is provided pursuant to the provincial Quality Assurance Framework and Carleton's Institutional Quality Assurance Process (IQAP).

**EXECUTIVE SUMMARY**

The Bachelor of Information Technology in Optical Systems and Sensors resides in the School of Information Technology, a unit administered by the Faculty of Engineering and Design.

As a consequence of the review, the programs were categorized by Carleton University's Senate Quality Assurance and Planning Committee (SQAPC) as being of good quality. (Carleton's IQAP 7.2.13-7.2.14).

The External Reviewers' report offered a very positive assessment of the programs. Within the context of this positive assessment, the report nonetheless made a number of recommendations for the continuing enhancement of the programs. These recommendations were productively addressed by the Director of the School of Information Technology and the Dean of the Faculty of Engineering and Design in a response to the External Reviewers' report and Implementation on Plan that was submitted to SQAPC on April 14, 2022.

Bachelor of Information Technology: Optical Systems and Sensors  
 Unit Response to External Reviewers' Report & Implementation Plan  
 Programs Being Reviewed: Undergraduate Programs

Note: This document is forwarded to Senate, the Quality Council and posted on the Vice- Provost's external website.

UNIT RESPONSE AND IMPLEMENTATION PLAN					
Programs Being Reviewed:					
Prepared by (name/position/unit):					
External Reviewer Recommendation & Categorization	Unit Response: 1- Agreed to unconditionally 2- Agreed to if additional resources permit (describe resources) 3- Agreed to in principle 4- Not agreed to Rationales are required for categories 2, 3 & 4	Action Item	Owner	Timeline	Will the action described require calendar changes? (Y or N)
1. Diversify the Program Advisory Committee in terms of expertise, industrial sectors, and geographical representation. (Concern)	1- <i>Agreed to unconditionally</i>	<i>Discuss the recommendation of Diversity with the current Program Advisory Committee (PAC) members of the OSS program and put forward a plan to reach out to experts (from different sectors within the industry of photonics, optical systems and sensors, autonomous vehicles, ML/DL/AI, telecom and high-tech) to join the PAC.</i>	<i>Applied Science &amp; Environmental Technology (ASET), Algonquin College</i>	<i>This will be included as an agenda item during the Fall 2021 PAC meeting and will be included as a follow-up action item to be completed no later than December 2021.</i>	<i>No</i>
2. Review the course sequence relevant to the development of simulation and programming skills to ensure it stays current with emerging technologies and knowledge. (Concern)	3- <i>Agreed to in principle</i>	<i>The course OSS2009 will be replaced with a title/description to match NET2013 (however, OSS2009 will still taught at Algonquin as to not affect the transfer of funds)</i>	<i>BIT-OSS</i>	<i>2021-2022 academic year.</i>	<i>Yes</i>

		<p><i>The first sentence in NET2013 will be modified to better describe the course.</i></p> <p><i>Python will be explicitly introduced into OSS3013 Software Design for OSS, as per the description.</i></p> <p><i>BIT1204 Electromagnetism &amp; Modern Physics will be transferred to be a course for OSS students only (rather than taught with other students)</i></p> <p><i>Merging BIT2001 Introduction to Business and BIT2002 Marketing in the IT Sector to make one course. This will allow to have a space for a new 4<sup>th</sup> year level course OSS4xxx Machine Learning and Deep Learning; which will be a prerequisite to the current Computer Vision course.</i></p>	D-CSIT		
3. Examine the opportunity to include training in professional skills in general, and Ethics in particular. (Opportunity)	3- <i>Agreed to in principle</i>	<p><i>These skills will be added as learning outcomes where possible to the course OSS3009 Project Management.</i></p> <p><i>Rename the course to: Project Management and Professional Skills</i></p>	D-CSIT		Yes

<p>4. Establish a program committee involving program coordinators from Carleton University and Algonquin College, and student representatives to perform program monitoring and establish a systematic feedback mechanism. (Weakness)</p>	<p>3- <i>Agreed to in principle</i></p>	<p><i>The OSS has already a Program Council which consists of Student Representatives (1<sup>st</sup> y, 2<sup>nd</sup> y, 3<sup>rd</sup> y, and 4<sup>th</sup> y) OSS Coordinator (AC), and ASET Department Chair.</i></p> <p><i>During the first half of every semester, the BIT-OSS class representative attends a Program Council meeting (attended by the Chair, ASET and Program Coordinator, BIT-OSS) to provide feedback regarding their experience in courses</i></p> <p><i>To meet this recommendation, the OSS Coordinator and CSIT-Director (CU) can be added to the Program Council. The minutes of the meetings will also be provided</i></p>	<p><i>Applied Science &amp; Environmental Technology (ASET), Algonquin College</i></p>	<p><i>Fall 2021</i></p>	<p><i>No</i></p>
<p>5. Experimental training must adapt quickly within this rapidly evolving high technology field. A plan should be developed for the periodic renewal of laboratory equipment and course material to support this key advantage of the program. (Concern)</p>	<p>2- <i>Agreed to if additional resources permit (describe resources)</i></p> <p><i>Emerging technology is expensive and, in some cases, can quickly become obsolete. AC needs to balance the need to provide students with cutting-edge technology with budgetary constraints within the School of Advanced Technology.</i></p> <p><i>Algonquin College has been able to secure partnerships with local industry partners in the OSS sector to secure a significant number of equipment</i></p>	<p><i>BIT-OSS course outlines delivered by AC are regularly reviewed by the Program Advisory Committee (PAC) and the Joint Advisory Committee (JAC) and updated to ensure relevance to emerging industry trends.</i></p> <p><i>Some of the lab equipment and tools in the photonics labs (room T329, T332, T129) are at various states in their operational lifecycle and several pieces of equipment are in need of maintenance.</i></p> <p><i>The plan is to:</i></p>	<p><i>Applied Science &amp; Environmental Technology (ASET), Algonquin College</i></p>	<ul style="list-style-type: none"> <li>• <i>2021-2022 academic year (Action items 2,3)</i></li> <li>• <i>Ongoing (Action item 1)</i></li> </ul>	<p><i>No</i></p>

	<p>donations to the OSS program (e.g., Ciena donation in 2020)</p> <p>Further action items related to the purchase and/or maintenance of lab equipment will require a financial commitment from the School of Advanced Technology to be reviewed annually.</p>	<ol style="list-style-type: none"> <li>1. Continue to foster industry partnerships in order to receive equipment donations and upgrades.</li> <li>2. Create a 5-year capital equipment management plan to forecast capital expenditures.</li> <li>3. Create an ongoing preventative maintenance schedule in order to keep existing equipment in working order.</li> </ol>			
6. Include one or two elective technical courses in the final year to allow students deeper learning in one aspect, e.g., hardware vs software, or to acquire a specialization in an application area. (Opportunity)	4- Not agreed to	Currently the curriculum is too packed to support electives; students wishing to specialize can do so in capstone project.	N/A		No
7. Establish a plan to ensure that students who have seen their curriculum most affected by the pandemic are able to catch up on practical training with hands-on experiments. (Concern)	1- Agreed to unconditionally	<p>Algonquin College initially created a plan to host students at a lab Bootcamp in the month of May 2021 for the 1<sup>st</sup> year students to come in groups to the lab in person and conduct hands-on lab experiments for the courses: OSS1003 and OSS1005. Similarly, for the 2<sup>nd</sup> year students to conduct hands-on lab experiments for the courses: OSS2002 OSS2003 and OSS2006.</p> <p>Due to the Ontario Government stay-at-home order, there is a plan to hold</p>	Applied Science & Environmental Technology (ASET), Algonquin College	Fall 2021	No

		<p><i>the Bootcamp in the Fall or Winter term 2021/2022.</i></p> <p><i>Currently Algonquin will hold labs in person.</i></p>			
<p>8. Establish a forum or means to foster collaboration opportunities for externally funded research between faculty members of Algonquin College and Carleton University. (Opportunity)</p>	<p>3- <i>Agreed to in principle</i></p>	<p><i>Many OSS professors from AC and CU are involved in applied research in partnership with industry and getting federal/provincial funding grants.</i></p> <p><i>We plan to host an AC-CU meeting to discuss research project collaborations between OSS professors and get the OSS students involved in these research projects at various levels (including Capstone, which has been the case for the past 3 years already).</i></p> <p><i>In addition, we shall engage the PAC in the development of research projects related to their domain of expertise and interest.</i></p>	<p><i>Carleton University and Algonquin College</i></p>	<p><i>2021-2022 academic year</i></p>	<p><i>No</i></p>