DECISION ACADEMIC

LAKEHEAD UNIVERSITY

FACULTY OF ENGINEERING

CHANGE REQUEST REPORT

Change Request Tracking Number: 2025-ENG-9160

Title of Change Request: Major modification to BENG Mechatronics Program (TBay and Barrie)

Status of Change Request: In Workflow

Change Request can't be split

CHANGE REQUEST CONTENTS

#	Type	Title
1.	New Version of a Degree	Bachelor of Engineering (Mechatronics Engineering)

CHANGE REQUEST HISTORY

Workflow Stage	Action Type	Action Taken By	Change Made	Action Rationale	Date
Initiator	Approved	Manager of Curriculum Development	Yes	Submitted to workflow	11/13/2025, 03:06 PM
Submission Review (Deputy Provost)	Approved	Deputy Provost	Yes	In correct workflow	11/14/2025, 12:04 PM
Advisory Panel Review	Approved	Deputy Provost	No	Advisory has reviewed	11/19/2025, 12:25 PM
Dean and Faculty Council Review Stage	Approved	Krishnamoorthy Natarajan	Yes	fixed a small lab hour total in Semester II of the revised program	11/20/2025, 01:55 PM
Additional Dean-Science and Environmental Studies	Relegated	SES Admin	No	Relegating back to initiator as per email March 10, 2026	03/12/2026, 11:28 AM
Initiator	Approved	Manager of Curriculum Development	Yes	Attachments updated. Associated with 2026-ENG-9217	03/24/2026, 09:50 AM
Additional Dean-Science and Environmental Studies	Approved	Todd Randall	No	Not fully in support. I have advanced this proposal forward, noting that FSES is not in agreement with some aspects of what is proposed. There are no specific concerns with Math courses in the programs, however the term of Computer Science 1411 needs to be confirmed as Fall in year 1 (for Barrie STEM Hub) and we respectively disagree / oppose the proposed plan involving Physics courses that (a) replaces PHYS 1212 with PHYS 1070; (b) does not use the suitable prerequisite for PHYS 1212 (which is PHYS 1211).	04/01/2026, 06:15 PM

			These were discussed at FSES Faculty Council in February 2026 and shared back to the Dean of Engineering, which resulted in the proposal being related back to the initiator to reconsider our feedback. It appears this feedback has not be taken into account in the latest version. Noting that this is time sensitive (if approved, these changes would need to be in place for Fall 2026), I have advanced this proposal forward to SAC-QA with this note that these concerns around Physics and Computer Science have not been addressed. Fundamentally we are in support of Mechatronics Engineering program in both Thunder Bay and Barrie STEM Hub, but cannot fully endorse this since due to the outstanding issues mentioned above. See memo from Dean uploaded to Supporting Documents entitled “memo FSES Feedback on 2025-ENG-9160.”

SUPPORTING DOCUMENTS

File Name	Uploaded By	Upload Date	Size
2025-ENG-9160 Maj Mod_BEng Mechatronics Eng_March 23_2026.pdf	Manager of Curriculum Development	03/24/2026, 09:20 AM	622 KB

memo FSES Feedback on 2025-ENG-9160 MajorMod to Mechatronics to2026-04-01 TR.pdf	Todd Randall	04/01/2026, 06:15 PM	0.99 MB
Summary of Changes_2025-ENG-9160_March 17_2026.pdf	Manager of Curriculum Development	03/24/2026, 09:20 AM	474 KB

SUPPORTING DOCUMENTS AUDIT TRAIL

File Name	User	Date	Action
2025-ENG-9160 Maj Mod_BEng Mechatronics Eng_March 23_2026.pdf	Manager of Curriculum Development	03/24/2026, 09:20 AM	Uploaded
memo FSES Feedback on 2025-ENG-9160 MajorMod to Mechatronics to2026-04-01 TR.pdf	Todd Randall	04/01/2026, 06:14 PM	Uploaded
Summary of Changes_2025-ENG-9160_March 17_2026.pdf	Manager of Curriculum Development	03/24/2026, 09:20 AM	Uploaded

CHANGE REQUEST COMMENTS

None.

1. New Version of a Degree	**Bachelor of Engineering (Mechatronics Engineering)**

DEGREE DETAILS

FORM: Major modification (A) – existing program.

NOTE TO USER about Quality Assurance requirements:

Visit this link to learn about the proposal requirements and the process for review and approval for Major Modifications to Programs.

Select the type of major modification you are making:

- Degree/Major

The following is information that is displayed in the University Calendar

Location:

- Thunder Bay Campus
- Barrie STEM Hub

Title of Program: Bachelor of Engineering (Mechatronics Engineering)

Program Requirements:

~~Thunder~~ Thunder Bay and Barrie STEM Hub

Note: This program will launch at the Lakehead University's Barrie STEM Hub, located in downtown Barrie, Ontario, in Fall 2026. More information about the Barrie STEM Hub can be found here.

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No.	First Year ~~– 1~~: Fall Term (Term 1)	Lec	Lab/Tut		
1	~~Computer Science 1411 – Computer Programming I~~	~~3~~	~~1~~	~~2~~	Mathema 1210 – (I for En
~~3~~	2	Mathematics 1071* – Vectors and ~~Matrices~~ Matrices	3	2	
~~4~~	3	Mechanical Eng 1731 – Mechanical Engineering ~~1731 – Engineering~~ Drawing ~~& Design~~	0	3	
~~5~~	4	Electrical ~~Engineering~~ Eng 1236 – Electric Circuit Theory I	3	1.5	
~~6~~	5	Mechatronics ~~Engineering~~ Eng 1553 – Materials & Processes for Mechatronics	3	3	
6	Physics 1070 – Semiconductor Physics	3	1		
	Total	15	11.5		

** Students who have completed Grade 12 U Calculus and Vectors with a minimum grade of 60% are not required to take Mathematics 1071.*

No.	First Year ~~– 1: Winter Term~~: Winter Term (Term 2)	Lec
1	~~Electrical Engineering~~ Computer Science 1411 – Computer Programming I	3
2	Electrical Eng 1536 – Electric Circuit Theory II	3
~~2~~	3	Mechanical ~~Engi~~ Eng 1552* ~~*~~ – Pr of Engineering M

~~3~~	4	Mathematics ~~123~~ ~~Calculus~~ 1230 Calculus II for
~~4~~	~~Physics 1212 – Introductory Physics II~~	~~3~~
5	Engineering 1015 – Professional and Technical ~~Communications~~ Communications	3
6	Mechatronics ~~Engineering~~ Eng 1030 – ~~Electronics~~ Electronics	3
	Total	19

∗ ~~∗~~ *~~This~~ This course is also offered in the Summer Transition Program ~~as~~ as Engineering 3016.*

No.	Second Year~~ 2: Fall Term~~: Fall Term (Term 3)	Lec
1	Mechatronics ~~Engineering 2011 –~~ Eng 2011 – Microcontrollers & Digital ~~Logic~~ Logic	3
2	Mathematics ~~2090 –~~ 2090 – Matrix Methods & Differential Equations ~~for Engineers~~	4
3	Mechatronics ~~Engineering~~ Eng 2015 ~~–~~ – Mechanics of Materials	3
4	Mechatronics ~~Engineering 2017 –~~ Eng 2017 – Robotics and Automation I	3
5	Electrical ~~Engineering~~ Eng 2438 – Control Systems I	3
6	Engineering 3015∗ ~~– Engineering~~ – Engineering Thermodynamics & Heat Transfer	4
	Total	~~18.5~~

∗ *This course is also offered in the Summer Transition ~~Program~~ Program and is not required for the Engineering Technology Diploma.*

No.	Second Year~~ 2: Winter Term~~:	Lec	Lab/Tut	

	Winter Term (Term 4)				
1	Mechatronics ~~Engineering~~ Eng 2019 – Mechatronics Design I	3	1.5		
2	Mechanical ~~Engineering~~ Eng 1635 – Fluid Mechanics	3	1.5		
3	~~Software Engineering 2571* – Computer Hardware & Software Systems~~	~~3~~	~~1.5~~	~~4~~	~~Mecha Engine~~ Mecha 2434 - Measur
~~5~~	4	Electrical ~~Engineering~~ Eng 2137 – Engineering Probability & Statistics	3	1	
~~6~~	5	Engineering 3014** – Engineering ~~Chemistry~~	~~4~~	~~1~~	
–	~~Total~~	~~19~~	~~8~~		

~~* With the approval of the Department of Mechanical & Mechatronics Engineering, this course may be replaced by Mechatronics Engineering~~

Chemistry	4
6	Mechatronics Eng 2939 Project

~~(0-0;~~

3

~~–~~

0

~~)~~

	Total

** ~~–~~ *This course is also offered in the Summer Transition ~~Program~~ Program, and is not required for the Engineering Technology Diploma.*

Note: At this point, all students are required to apply to graduate with an Engineering Technology Diploma in Mechatronics Engineering.

No.	Third Year~~ – 3: Fall Term~~: Fall Term (Term 5)	Lec
1	Mechatronics ~~Engineering~~ Eng 3011 – Actuators ~~and~~ & Power ~~Electronics~~ Electronics	3
2	Mechatronics ~~Engineering 3451~~ Eng 3451 – Kinematics & Dynamics of Machines~~ in Mechatronics~~	3
3	Mechatronics ~~Engineering~~ Eng 3025 – Robotics and Automation II	3
4	~~Mechatronics Engineering 3035 –~~ Mechatronics Eng 3035 – Programming for Mechatronics Systems	3
5	~~Sociology 2755* – Technology, Society & Indigenous Peoples in Canada~~	Mathematics 3071 Discrete Mathemati Engineers
6	** ~~One~~ Complementary Studies Elective Course I	3
	Total	18

~~*~~ ~~*The Indigenous Content requirement is met by taking Sociology 2755, a Type E course. This course may be taken at any time in the 3rd or 4th year of the program.*~~

No.	Third Year~~ – 3: Winter Term~~: Winter Term (Term 6)	Lec
1	~~Electrical Engineering 3312 – Embedded Systems~~	Mechatronics Eng 3 Mechatronics Desigr
2	~~Mechatronics Engineering 3017 – Mechatronics Design II~~	Electrical Eng 331 Embedded Systems
3	Electrical ~~Engineering~~ Eng 3334 – – Control Systems II	3
4	Software ~~Engineering~~ Eng 3558 – Numerical Methods & Modeling	3

5	Mechatronics ~~Engineering 3033~~ Eng 3033 – Machine Design for ~~Mechatronics~~Mechatronics	3
6	Engineering ~~3336 –~~ 3336 – Engineering Economics & Project ~~Management~~ Management	4
	Total	19

~~Mechatronics Engineering Project~~

No.	Fourth Year~~ – 4: Fall Term~~: Fall Term (Term 7)	Lec
1	Mechatronics ~~Engineering 4016~~ Eng 4016 – Systems and Signal Processing	3
2	~~Mechanical~~ Chemical Engineering ~~4436~~ 4032 – ~~Mechanical Vibrations~~Materials Science	3
~~3~~	~~Business 5035 – Corporate Innovation and Entrepreneurship~~	~~3~~
~~4~~	.5	
3	Mechatronics Eng 4969 – Degree	Project
4	Sociology 2755∗ – Technology, Society & Indigenous Peoples in Canada	3
5	Elective Course I	3
6	** ~~One~~ Complementary Studies Elective Course II	3
~~6~~	~~Elective Course I~~	~~3~~
	Total	18

∗ The Indigenous Content requirement is met by taking Sociology 2755, a Type E course. This course may be taken at any time in the 3rd or 4th year of the program.

~~1.~~

No.	Fourth Year~~ – 4: Winter Term~~:	Lec	Lab/Tut

	Winter Term (Term 8)			
1	~~- Electrical Engineering 4137 – Computer Networking~~	Mechatronics Eng 4173 – Artificial Intelligence for Mechatronics	3	1.5
2	Engineering ~~4539 –~~ 4539 – Professional Practice and Law	3	0	
3	~~- Mechatronics Engineering~~ Mechanical Eng 3710 – Engineering Physics	3	1	
4	Mechatronics Eng 4969 – Degree ~~Project~~ Project	3	0	~~4~~
5	~~5~~	Elective Course II	3	1
6	** ~~One~~ Complementary Studies Elective Course III	3	0	
	Total	18	~~4~~	3.5

** *Complementary Studies electives must be selected from the approved list of courses in the Faculty of Engineering.*

Elective courses

Mechatronics Engineering students will normally select their engineering elective courses from the following list:

1. Mechatronics Engineering 4013 – Big Data and Cloud Computing
2. Mechatronics Engineering 0538 – Special Topics in Mechatronics Engineering
3. Mechanical Engineering 4436 – Mechanical Vibrations
4. Electrical Engineering 4137 – Computer Networking
4. Mechanical Engineering 0537 – Manufacturing Processes and Production Systems
6. Electrical Engineering 4054 – Digital VLSI Circuit Design
7. Software Engineering 4557 – Data and Digital Communications
8. Computer Science 4313: Programming and the Internet of Things

More elective courses will be added under Mechatronics Engineering 0538 – Special Topics in Mechatronics Engineering.

Co-op Work Terms

Co-operative Education is a mandatory component of the BEng Mechatronics Engineering program. Students in BEng Mechatronics Engineering program are required to complete at least one Co-operative Education term in industry. It aims to integrate classroom study with workplace experience. The following summaries the co-operative work term requirements:

No.	Co-operative Work Terms	Ho
1	Engineering 2990 – Mechatronics Co-op Work Term 1	4
2	Engineering 3991 – Mechatronics Co-op Work Term 2	4
3	Engineering 4991 – Mechatronics Co-op Work Term 3	4
	Total Hours	1
	Minimum Hours	4

~~**Elective Courses**~~

~~Mechatronics Engineering students will normally select their engineering elective courses from the following list:~~

- ~~Computer Science 4313: Programming & the Internet of Things~~
- ~~Electrical Engineering 4054 – Digital VLSI Circuit Design~~
- ~~Mechanical Engineering 0537 – Manufacturing Processes and Production Systems~~
- ~~Software Engineering 0153 – Natural Language Processing~~
- ~~Software Engineering 4011 – Applied Computational Intelligence~~
- ~~Mechatronics Engineering 0538 – Special Topics in Mechatronics Engineering~~
- ~~Mechatronics Engineering 4013 – Big Data & Cloud Computing~~
- ~~Mechanical Engineering 4436 – Mechanical Vibrations~~

The following is information for Committee Review

Program Code: BENGDIP.METR

Calendar Start Term. When this change should be ~~2025~~2026~~-26~~27

displayed in the Calendar:	
Calendar End Term. When is the last calendar year this should be displayed?:	No Specified End Date Use No Specified End date unless you are removing it from the calendar.
Faculty or Institution Unit:	• Lakehead University • Faculty of Engineering
Academic Level:	Undergraduate
Total number of credits for the degree:	36.00
Transcript Title of Program:	Bachelor of Engineering (Mechatronics Engineering)
Degree Type:	BENG
This major modification may require a proposal brief. See link above for more information. If applicable, indicate if your proposal brief is attached:	• Yes In order to attach the Proposal Brief, save your work first and then scroll to the top and select Supporting Documentation tab.
Pedagogical rationale for this proposal. Why are you submitting this request?:	~~Request change English 1015 to new Engineering 1015 course, and add campus Barrie.Mechatronics Engineering is an interdisciplinary branch of engineering at the intersection of Mechanical, Electrical, and Software Engineering, as well as Computer Science. It focuses on the design and manufacturing of computer-controlled electromechanical systems. The BEng program in Mechatronics Engineering was launched in September 2023 at the Thunder Bay campus. Lakehead University also has the only Faculty of Engineering in Canada where, after graduating from high school, students can earn a Technology Diploma in Mechatronics Engineering at the end of Year 2. The proposed Mechatronics Engineering program in Barrie follows the strategic plan of Lakehead University to create an Engineering Hub in Barrie. We believe that it is now ready to move the Mechatronics Engineering program to the Barrie area to establish itself as a center for high quality education and research. The Mechatronics Engineering program objectives in Barrie Hub include recruitment and retention of outstanding faculty; attracting outstanding undergraduate students from a large pool of talented applicants in the region; establishing strong ties with the growing industrial sectors leading to research funds from federal and provincial agencies; promoting innovative quality education and research contributions to the region, the country, and the world. The expansion to Barrie campus is cost-effective and an opportunity to grow and benefit from the existence of other programs (e.g., Electrical Engineering, Computer Engineering, Software Engineering and Computer Science) which share multiple courses with Mechatronics Engineering. Furthermore, Barrie, is the fastest growing city in Ontario according to Statistics Canada. Given the significant student demand from the Greater Toronto Area (GTA), the new BEng Mechatronics Engineering program in Barrie can significantly increase~~

admissions and revenue. The current BEng Mechatronics Engineering curriculum was mainly for our general (Year-1 entry) undergraduate students. Now we have started to admit college transfer students. The proposed curriculum changes are to improve the curriculums (in both Thunder Bay and Barrie) to accommodate college transfer students to meet related CEAB requirements.

The following is information for Senate Budget Committee Consideration

	NOTE: Complete each section and provide full explanations for both "yes" and "no" answers. This will not be displayed in the calendar but will be used by the Senate Budget Committee when considering approval of this proposal. The creator of this proposal may be asked to attend a committee meeting to discuss this proposal. Contact the Chair of the Senate Budget Committee if you wish to discuss any of the questions below.
Will this program impact student enrolment in another program within the same faculty/unit?:	It may have some impact on student enrolment in Electrical Engineering and Mechanical Engineering programs, as Mechatronics Engineering is a new interdisciplinary undergraduate program related to Mechanical, Electrical and Software Engineering. In general, however, if an applicant is applying for the Mechatronics Engineering program, the applicant would prefer an interdisciplinary program, instead of a specific traditional Engineering program such as Mechanical, Electrical, and Software Engineering. NA
Will this program impact student enrolment in another program in a different faculty/unit?:	No. It is a new interdisciplinary program in Engineering. NA
Will additional resources be required (space, staff, equipment, etc.)?:	Yes. As a new undergraduate program, it requires five faculty members, two technologists as lab instructors, and an administrative assistant (1/4 time). Three teaching labs will be established: Mechatronics Lab, Robotics and Automation Lab, and Mechanical Engineering Lab. The related equipment will be purchased for the lab work. Spaces are also required for 6 classrooms, 5 faculty offices, 1 lab instructor office, faculty research labs, and a graduate student office. NA
How will this impact existing teaching loads within this faculty/unit?:	Five faculty members will be recruited or relocated from the Thunder Bay campus to the Barrie campus. They will teach the related courses. There is no direct impact on the existing teaching loads within the Faculty of Engineering, except increasing the number of students in the related courses. NA
What is the impact on the demand for teaching support services (library, computers, staff, etc.)?:	Extra computers are required for new labs. Two technologists will be recruited as lab instructors. Support services (e.g., library, technical services) will be provided by the new Engineering Hub in Barrie. In addition, students could access library sources at the Orillia campus. NA
Will this require outside support? If yes, please outline the amount and timing of the funding:	Yes. The City of Barrie will provide support to the Engineering Hub in Barrie. Details can be seen from the attached Support Memo from the dean of the Faculty of Engineering. NA