Action Plan: Physics & Astronomy

Date Self-Study was submitted to AQA: March 15, 2021

Date of External Review: July 7, 2020

The Action Plan, which follows the Self-Study and External Review, guides programs and departments as they:

- Follow-up on recommendations from the Self-Study and External Review;
- Develop realistic goals for improving or maintaining program quality;
- Determine the steps and resources required to reach those goals;
- Determine the people/groups responsible for each action;
- Establish a timeline (before the next program review cycle) and within which these steps will occur.

The Action Plan, like all other aspects of a Langara Program Review, is faculty driven and Dean led. Faculty develop the Action Plan in close collaboration with the Division Chair and Dean. Once the Action Plan is ready for review, the Chair/Coordinator, Division Chair and Dean should schedule a meeting with the Provost.

Institutional Response

This review represents thoughtful work by the department. Some of the action items are already underway or completed.

Particular focus within the rollout of the action plan should include:

- Developing program learning outcomes
- Updating or developing course learning outcomes
- Increasing consultation with other departments, and other institutions
- Creating and enhancing opportunities for student engagement

Signed _____ March 15/21

Dean Date

Signed _____ March 15, 2021

Provost and Vice-President Date

Recommendations from the Self-Study and External Review this Action Plan does NOT Address.

Provide a brief rationale for why each Recommendation cannot be addressed. Add or remove rows as necessary.

Recommendation	Self-Study or External Review (include p.#)	Rationale
It was noted that students must apply to graduate. What is the reasoning behind this barrier and can it be addressed so that the data may better reflect student success? If the students finish all their courses for an Associate Degree but do not apply to graduate, does this negatively affect the data provided? We recommend that Langara's Registrar and Enrolment Services (RES) investigate the purpose for this barrier.	External p. 5	Recommendation is not for our department
Internal to Langara College UT, the ERT recommends the creation of procedures to ensure consistent communication and feedback between the programs and service courses outside their department (for example Biology or Health science	External p. 4	Recommendation is not for our department

Recommendation	Self-Study or External Review (include p.#)	Rationale
majors taking physics courses).		
Based on feedback, many students seem ‘lost’ in UT. Does the information on Langara's website effectively communicate to UT transfer students what they need to know? Based on the evidence we recommend the creation of a specific UT student advising position for within the sciences be investigated.	External p. 4	Recommendation is not for our department
Better communication and strategizing around offerings in different departments would also help students.	External p. 4	Recommendation is not for our department
Better data from the RES on which students are in the Physics Associate Degree would be helpful, considering the number of UT students. Do most students register in general UT science and then choose a major later? Based on feedback, many students seem ‘lost’ in UT. Does the information on Langara's website effectively communicate to UT	External p. 4	Recommendation is not for our department

Recommendation	Self-Study or External Review (include p.#)	Rationale
transfer students what they need to know? Based on the evidence we recommend the creation of a specific UT student advising position for within the sciences be investigated.		
As mentioned earlier, better communication between UT departments at Langara is highly recommended to create more appropriate outcomes, standardized grading, and better scaffolding for students as they progress through their program.	External p.4	Recommendation is not for our department

Goal 1: increase Equity, Diversity & Inclusion in our department

List the Recommendation(s) this Goal addresses. Check the appropriate column to indicate if the Recommendation is from the Self-Study or External Review. Add or remove rows as needed.

Recommendation	Self-Study **(specify page #)**	External Review **(specify page #)**
We will review research on gender and physics instruction and make changes to encourage greater participation of women and non-binary students in our classes.	11	
We will request ongoing release time to create a position to recruit, welcome and encourage women and BIPOC students in our department and we will use one section of fall 2020 ADT for this purpose	11	3,7,8
We will come up with a strategy to measure the inclusion/diversity in our courses and take measures to increase inclusion/diversity.	14	3
We will investigate and implement ways to Indigenize our courses.	15	4,7,8
Analyze why the physics' department has a decreasing enrollment and what actions could be taken to address this trend.		7

Academic Plan Priority or Priorities this Goal supports. See the end of this document for the Academic Plan. Add or remove rows as needed,

Academic Plan Priorities
1.1, 2.1,2.2,2.3,3.1,3.2,3.3,4.1,4.2

Academic Plan Priorities

Planned Actions the program/department will complete to achieve this goal. Add or remove rows as needed.

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
Request release time for EDI coordinator	Chair & EDI coordinator	June 2021	ongoing	We have 1/3 time in Fall 2020 & Spring 2021 & associated ADT in Summer 2021
Measure inclusion/diversity and attitudes of students	EDI coordinator	Sept 2020	ongoing	The EDI coordinator has prepared and distributed a survey to physics students.
Produce program learning outcomes and remake PHYS 1114 to reflect Indigenization goals.	Chair & EDI coordinator	May 2021	August 2022	In collaboration with Natalie Knight, Intercultural Engagement Consultant

Resources required to achieve this goal.

Resources Required
Release time

++++++ Copy/paste this page per number of recommendations ++++++

Goal 2: fitting our courses together

List the Recommendation(s) this Goal addresses. Check the appropriate column to indicate if the Recommendation is from the Self-Study or External Review. Add or remove rows as needed.

Recommendation	Self-Study **(specify page #)**	External Review **(specify page #)**
The department will work with TCDC to develop program learning outcomes.	15	4
We will work with TCDC to review and update current course learning outcomes	15	4
We will work with TCDC to create a curriculum map that connects course learning outcomes to program outcomes	15	
Python is now a big part of undergrad Physics curriculum, we will investigate where to fit it into our program.	31	5
It would be a good idea for faculty to meet regularly to communicate their various approaches to create some form of standard delivery, while maintaining academic freedom.		4
Clear lab learning objectives need to be developed.		4
Check for alignment between learning activities, outcomes, and assessment and create scaffolding of		3, 5

Recommendation	Self-Study (specify page #)	External Review (specify page #)
learning outcomes between courses at different levels.		
Investigate whether international students need more background in math.		5
student tutors should be monitored more consistently by the department.		5
Student access and Universal Design for Learning (UDL) should be considered in all online course design.		7

Academic Plan Priority or Priorities this Goal supports. See the end of this document for the Academic Plan. Add or remove rows as needed,

Academic Plan Priorities
1.1, 1.2

Planned Actions the program/department will complete to achieve this goal. Add or remove rows as needed.

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
Produce program learning outcomes and remake PHYS 1114 to reflect Indigenization goals.	Chair & EDI coordinator	May 2021	August 2022	In collaboration with Natalie Knight, Intercultural Engagement Consultant

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
Develop course & lab learning outcomes and that connect courses to each other and to program learning outcomes – starting with PHYS 1114	committee(s)	May 2022	August 2023	
Investigate whether international students need more background in math.	Chair & committee	Oct 28 2020	Oct 28 2021	
Student access and Universal Design for Learning (UDL) should be considered in all online course design.	all	April 2020	done	Everyone is considering this
Investigate adding Python to our courses	committee	May 2021	August 2022	
Provide orientation or training for tutors in help centre	Faculty in charge of tutors	May 2021	ongoing	

Resources required to achieve this goal.

Resources Required

Goal 3: Fitting our courses into the college

List the Recommendation(s) this Goal addresses. Check the appropriate column to indicate if the Recommendation is from the Self-Study or External Review. Add or remove rows as needed.

Recommendation	Self-Study **(specify page #)**	External Review **(specify page #)**
We will ensure that our program learning outcomes, course learning outcomes and curriculum map align with college priorities.	15	
We will continue our practice of inviting representatives of service departments like Accessibility Services, Counselling, Intercultural Initiatives, Indigenous Education & Services, the learning commons, the library, and so on to our department meetings so that we can make better use of these services	36	
Investigate how the astronomy courses support the desired learning outcomes for the arts program area		3
The creation of learning outcomes should be done with consultation with other key departments that the physics courses support, and with a curriculum expert from Langara's Teaching and Curriculum Development Centre (TCDC). For example, physics' consultation with life science programs is continuously required, to determine the level of calculus required.		4

Recommendation	Self-Study **(specify page #)**	External Review **(specify page #)**
Investigate the need for a two-year Physics Diploma without the need to adhere to the Associate of Science requirements.		5
Survey the student support services at Langara to find out what the typical issues are that students have in this program.		6
Better communication with the Computer Science and Life Science departments to help align our course delivery and learning outcomes with the needs of other programs eg, Biology and Computer Science		7

Academic Plan Priority or Priorities this Goal supports. See the end of this document for the Academic Plan. Add or remove rows as needed,

Academic Plan Priorities
All

Planned Actions the program/department will complete to achieve this goal. Add or remove rows as needed.

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
continue our practice of inviting representatives of service	Chair & EDI Coordinator	On going	On going	

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
departments				
Create a committee of members of departments that require physics courses to give input to our department.	Chair	Jan 2021	On going	Chair will bring to MSDV meeting
Investigate how the astronomy courses support the desired learning outcomes for the arts program area	Astronomy instructors	May 2021	August 2021	
Survey the student support services at Langara to find out what the typical issues are that students have in this program.	Chair	May 2021	June 2021	Chair will contact support services
Investigate the need for a two-year Physics Diploma without the need to adhere to the Associate of Science requirements.	chair	May 2021	May 2021	Chair will contact articulation committee and Registrar for opinions

Resources required to achieve this goal.

Resources Required

Goal 4: fitting our program into the post-secondary system

List the Recommendation(s) this Goal addresses. Check the appropriate column to indicate if the Recommendation is from the Self-Study or External Review. Add or remove rows as needed.

Recommendation	Self-Study **(specify page #)**	External Review **(specify page #)**
We will review the courses required for the Associate of Science Degree in Physics to determine if any courses should be added or removed.	11	3
We will review our 2 nd year program in light of recent changes to 2 nd year at some of the research universities.	31	
We will investigate developing a first-year set of physics courses specifically for the Engineering Transfer Program to match up with the Course structure outlined by the Engineering Articulation Committee.	31	6
Investigate why enrolment is down - perhaps broken down into domestic and international categories.		3
Get a clear idea of who our students are. Who does Langara Physics and Astronomy serve? Why do students come to do physics at Langara? Which programs are they looking to move on to?		3

Recommendation	Self-Study (specify page #)	External Review (specify page #)
Get feedback from receiving institutions on preparedness of Langara students for further study		4
Get release time and funding for the physics department to determine areas of potential growth and the need for focused marketing and develop/utilize more high school outreach		6,7
Careful monitoring of UBC's online lab program is highly advised.		7

Academic Plan Priority or Priorities this Goal supports. See the end of this document for the Academic Plan. Add or remove rows as needed,

Academic Plan Priorities
1.1, 2.2, 2.3

Planned Actions the program/department will complete to achieve this goal. Add or remove rows as needed.

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
Develop a first-year set of physics courses specifically for the Engineering Transfer Program	committee	May 2022	August 2024	In consultation with the Engineering Coordinator
Review requirements of Associate of Science – physics				

Planned Actions	Led by	Begin on	Anticipated Completion	Notes
Review 2nd year program	committee	May 2021	August 2021	
Survey students to determine: who are they? Why are they here? Where are they going?	Chair	May 2022	December 2022	
Get feedback from receiving institutions on preparedness of Langara students for further study	chair	May 2021	May 2021	Ask articulation committee

Resources required to achieve this goal.

Resources Required

++++++ DELETE THIS SECTION ONCE PRIORITIES ARE SET IN PLACE ++++++

Academic Plan Priorities: *CUT & PASTE UNDER RECOMMENDATIONS AS NEEDED*

Academic Plan Priority One: Learning and Teaching

1.1. Promote and support innovation and quality in teaching and curriculum design
1.2. Advance the application of innovative technologies that support learning and teaching
1.3. Maintain and expand experiential education opportunities

Academic Plan Priority Two: Student Support

2.1. Strengthen and develop student support systems
2.2. Maintain enrolments to maximize student access and success
2.3. Continue to develop and refine external and internal student pathways

Academic Plan Priority Three: Aboriginal Initiatives

3.1. Increase recruitment, retention, and graduation of Aboriginal students
3.2. Expand awareness, acceptance, and inclusiveness of Aboriginal cultures within Langara
3.3. Strengthen partnerships with Aboriginal community

Academic Plan Priority Four: International Initiatives

4.1. Position Langara as the school of choice for post-secondary international students in British Columbia
4.2. Increase intercultural supports for students, faculty, and staff
4.3. Provide international learning opportunities, both on campus and abroad for students and faculty

Academic Plan Priority Five: Environmental, financial, and social sustainability

5.1. Create and strengthen programming that encompasses the cross-disciplinary nature of sustainability
5.2. Advocate and model sustainable practices
5.3. Build sustainable partnerships with employers, community partners, and alumni

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