

Final Assessment Report

Physics, Biological and Medical Physics, Physics and Astronomy, Mathematical Physics (BSc), Physics, Bio Physics (Minors), Physics (MSc/PhD – Joint with Guelph)

June 2025

Executive Summary

External reviewers found that the Physics, Biological and Medical Physics, Physics and Astronomy, Mathematical Physics (BSc), Physics, Bio Physics (Minors), and Physics (MSc/PhD – Joint with University of Guelph) programs delivered by the Department of Physics and Astronomy were in good standing.

“The review committee had an overall positive impression of the Department, its members, its ground-breaking innovation and research, and the breadth of its undergraduate and co-op programs.”

A total of seven recommendations were provided by the reviewers, regarding student experience, teaching support, specific programs, graduate courses, administrative support, and building resources. In response, the program created a plan outlining the specific actions proposed to address each recommendation as well as a timeline for implementation. The next cyclical review for this program is scheduled for 2026-2027.

Enrollment over the past three years

Undergraduate Programs

	Physics BSc	Bio/Medical Physics (BSc)	Physics & Astronomy (BSc)	Mathematical Physics (BSc)	Minors
2024-2025 (CURRENT YR)	190	20	307	188	23
2023-2024 (LAST YR)	205	30	296	172	30
2022-2023 (THREE YRS)	194	42	285	176	28

Graduate Programs

	Physics (MSc)	Physics (MSc) - Perimeter	Physics (MSc) - Nano	Physics (MSc) - Quantum	Physics (PhD)	Physics (PhD) - Nano	Physics (PhD) - Quantum
2024-2025 (CURRENT YR)	38	25	2	25	12	4	52
2023-2024 (LAST YR)	46	25	3	23	13	5	53
2022-2023 (THREE YRS)	39	28	3	30	15	7	51

*Based on Active Student extract from Quest on November 21, 2024.

Background

In accordance with the University of Waterloo's Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response of the Physics, Biological and Medical Physics, Physics and Astronomy, Mathematical Physics (BSc), Physics, Bio Physics (Minors), and Physics (MSc/PhD – Joint with University of Guelph) programs delivered by the Department of Physics and Astronomy. A self-study (Volume I, II, III) was submitted to the Associate Vice-President, Academic and Associate Vice-President, Graduate Studies and Postdoctoral Affairs on December 16, 2022. The self-study (Volume I) presented the program descriptions and learning outcomes, an analytical assessment of the programs, including the data collected from a student survey, along with the standard data package prepared by the Office of Institutional Analysis & Planning (IAP). The CVs for each faculty member with a key role in the delivery of the program(s) were included in Volume II of the self-study.

From Volume III, two arm's-length external reviewers were selected by the Associate Vice-President, Academic and Associate Vice-President, Graduate Studies and Postdoctoral Affairs: Professor Jeff Sonier, Department of Physics, Simon Fraser University; and Professor Graeme Luke, Department of Physics and Astronomy, McMaster University.

Reviewers appraised the self-study documentation and conducted a site visit to the University on October 4-6, 2023. An internal reviewer from the University of Waterloo, Professor James Danckert, Department of Psychology, was selected to accompany the external reviewers. The visit included interviews with the UWaterloo's Vice-President, Academic & Provost; Associate Vice-President, Academic and Associate Vice-President, Graduate Studies and Postdoctoral Affairs; Dean of the Faculty of Science; Faculty Associate Deans of Undergraduate and Graduate Studies; Chair of the Department; and the Assistant Vice-President of Graduate Studies, University of Guelph. The Review Team met as well with faculty members, staff and current undergraduate and graduate student. In addition, they had an opportunity to tour the facilities and meet with representatives from the library, and Co-operative Education.

Following the site visit, the external reviewers submitted a report on their findings, with recommendations. Subsequently, the program responded to each recommendation and outlined a plan for implementation of the recommendations. Finally, the Dean responded to the external reviewers' recommendations, and endorsed the plans outlined by the program.

This final assessment report is based on information extracted, in many cases verbatim, from the self-study, the external reviewers' report, the program response and the Dean's response.

Program Characteristics

Undergraduate programs

All the major programs share a core of physics courses and diversify based upon this strong foundation in science. All are offered in both regular and co-op versions. The four main BSc plans included in this review are:

- HONOURS PHYSICS - offers the widest range of courses and laboratory components, leading to and breadth of knowledge and practical skills. Core courses include classical and quantum mechanics, electromagnetism, and statistical/thermal physics.
- PHYSICS AND ASTRONOMY - emphasizes the study of astrophysical phenomena such as dark matter, singularities and the origin of the universe. This dual-pronged study approach prepares students for career paths in both physics and astronomy.
- MATHEMATICAL PHYSICS - is a course of study intended to develop strong skills focused on the theoretical/mathematical side of physics. The core program includes numerous advanced math courses, but less laboratory work than the Honours Physics program.
- BIOLOGICAL AND MEDICAL PHYSICS - provides a solid foundation in basic physics, chemistry and biology while allowing a flexible, interdisciplinary and integrative approach to the study of the life sciences. While emphasizing physics, through appropriate selection of electives, this program prepares students for careers which require a broad scientific knowledge including programs in biophysics, medical physics, optometry, medicine, veterinary medicine, dentistry, physiotherapy, occupational therapy, pharmacy, forensics, and radiotherapy.

Biological and Medical Physics includes specialization options in Biophysics and Medical physics. This review also considers the Physics and Biophysics minors.

Graduate Programs

The Department offers several options for graduate programs at the MSc and PhD levels.

- MSc in PHYSICS (Thesis option) is a research-based MSc degree. Students work closely with a graduate supervisor (determined prior to admission) to perform original research in an area of Physics, culminating in an MSc thesis. The program requires

completion of 4 courses.

- **MSc in PHYSICS (Nanotechnology Specialization)** is a research based MSc degree focused on Nanotechnology. It is a collaborative graduate program offered through six member departments in Science and Engineering, and the Waterloo Institute for Nanotechnology (WIN). In addition to completing a thesis, students take a diverse array of graduate courses in nanotechnology, in addition to core physics courses.
- **MSc in PHYSICS (Quantum Information Specialization)** is a collaborative graduate program offered through six member departments in Science and Engineering, and the Institute for Quantum Computing (IQC). In addition to completing a thesis, Students enrolled in this program take core and specialized graduate courses in Quantum Information.
- **MSc in PHYSICS (Research Paper Option)** is principally a course-based MSc degree with a research component. Students also have the opportunity to perform research in an area of Physics, culminating in a research paper. Unlike our other programs, students in this program typically do not receive financial support.
- **MSc in PHYSICS (Perimeter Scholars International)** is principally a course-based MSc degree with a research component. Perimeter Scholars International (PSI) is an intensive 10-month course in theoretical physics. Courses are offered at Perimeter Institute, and upon completion, PSI graduates receive a Master's degree in Physics & Astronomy from the University of Waterloo. PSI students are fully funded.
- **PhD in PHYSICS** Students work closely with a graduate supervisor (determined prior to admission) to perform original research in an area of Physics, culminating in an PhD thesis.
- **PhD in PHYSICS (Nanotechnology Specialization)** is a collaborative graduate program offered through six member departments in Science and Engineering, and the Waterloo Institute for Nanotechnology (WIN). In addition to completing a PhD thesis in an area of Nanotechnology, students take a diverse array of graduate courses in nanotechnology, in addition to core physics courses.
- **PhD in PHYSICS (Quantum Information Specialization)** is a collaborative graduate program offered through six member departments in Science and Engineering, and the Institute for Quantum Computing. Students take specialized courses in Quantum Information and work closely with a graduate supervisor (determined prior to admission) to perform original research in an area of Physics, culminating in an PhD thesis in an area of Quantum Information.

Summary of Strengths, Challenges and Weaknesses based on Self-Study

Strengths

- Nationally and internationally competitive.
- Co-op highly successful.
- Strong research program.
- Diversity in undergraduate employment after graduation.
- Exceptional links to premier research institutes, such as the Institute for Quantum Computing and the Perimeter Institute for Theoretical Physics.
- Fourth-year student exit interviews point to the senior labs as a highlight of their experience at Waterloo.

Challenges

- Growing enrolment and impact on laboratories, upper year class sizes. Maintaining the teaching load to keep research competitive. This is a particular challenge in a co-op environment, which requires additional teaching resources compared to schools that have a single cohort.
- The large incoming undergraduate cohorts have yielded many under-prepared students in mathematics and physics.
- Balancing the low enrolment in Biological and Medical Physics with the high cost of delivering the program (*note this is being addressed as of 2021).
- Our growing enrolment together with a large graduate program is resulting in very large class sizes. For example, As the physics enrolment has grown, scheduling our core computational physics course (Phys 236) has become increasingly challenging in this limited space. Recently we opened a second section for this course, but scheduling midterms and exams remains problematic.
- Need to further improve gender balance.
- Managing expectations and goals of an increasingly diverse student population.
- Large enrolment puts pressure on job development within the co-op program.
- Adapting staffing and management to a much larger Department.
- Maintaining an accessible record of course content (outlines, exams) in a useful form.

- Improving student awareness of the valuable skill sets they develop and encouraging them to think broadly about potential co-op positions and careers.
- Developing the mathematics skills of the less-well prepared undergraduate students so they can focus on physics.
- Complexity and size of the graduate program involving many partners is difficult to manage.
- Increasing graduate student funding to keep pace with increasing cost of living.
- As an increasingly successful research-intensive unit in which (expensive) laboratory work is an integral part of the undergraduate education, Physics struggles to attract the resources it needs in a strict activity-based budget model. The graduate program in particular has been under threat in recent years. Funding for key Department activities (e.g., colloquium) and staff (especially those associated with the undergraduate laboratories), are also at risk.

Weaknesses

- Labs need updating – particularly first year – laboratory updates are a priority in our strategic plan. Upgrades are ongoing. We currently have modest demonstrator presence in our first-year labs, a critical weakness in our program highlighted by students and faculty.
- Quality of space – Our research space is over 60 years old and past its useful lifetime. It is ill-suited to a collaborative approach to physics and needs to be replaced. Plans are in hand but execution has been slow.
- Our faculty has not achieved a gender balance reflective of the general population.
- Several research groups have not hired young talent in more than a decade. At the same time our star is rising in the QS rankings. This rise is threatened by an aging faculty. A plan for rejuvenation with support from the Dean and Provost.
- The nascent university budget model will in coming years put the Faculty of Science millions of dollars in deficit. A deficit of this magnitude would threaten all programs, including our strong graduate program. The model must recognize and value the higher cost of Science relative to other programs, such as Mathematics. If enacted, Physics & Astronomy will decline rapidly at Waterloo.

- The graduate program administration is efficient and effective though severely strained under the enormous increased of workload associated with the large growth of the number of graduate students entering our program. The graduate program is understaffed with only 2 administrators.
- Student feedback has identified continuity issues in their programs due to variance in teaching styles.

Specific to Joint Graduate Programs with Guelph University

Strengths

- Our faculty and students perform high-quality, high-impact work, with excellent levels of external funding support.
- Our students are well-trained and generally find good jobs in STEM fields or academia, once they leave our graduate program.
- Overall, our students are satisfied with most aspects of the program, including faculty supervision.
- Our program uses some of the Graduate Growth funding from the centre to support faculty who can attract students, but who do not have room in their funding envelope to compensate the student. This takes advantage of the opportunity presented by having talented students interested in our program, increases research productivity in the Department, and can lead to better future funding outcomes for these faculty.
- The number of graduate students in the program has grown over the reporting period, as has (not coincidentally) Guelph's faculty complement; it is now fair to say that the Guelph portion of the graduate program is in a (marginally-stable) steady state, given the current institutional support.

Challenges

- The TA situation at Guelph continues to be underfunded. The short-fall is offset with other internal revenues, such a grad growth, and external funds. Thus, the Guelph Physics department has managed to grant TAs to almost every graduate student that has requested one. Some graduate students who are outside their safety period do not receive TA support. However, the long-term continuance of the grad growth funding is not guaranteed, and thus we have been conservative with the use of the Graduate Growth budget to ensure that we can fund the commitments.

- Recruiting top-quality students into our graduate program, and the associated issue of advertising the strength and quality of the research effort in the Physics department at Guelph is an ongoing challenge, which requires constant attention. This is especially the case when recruiting top international students, who may not be aware of Guelph's strengths. Given recent institutional support of international students through the IDTS, this challenge of "getting the word out" is becoming more pressing, if we are to access these funds.
- Related to both TA support and recruitment effort is the challenge of raising student compensation levels to keep pace with competitive pressures from other institutions. Our compensation package has increased slightly, but perhaps less than at the institutions we compete with for graduate students.
- Space is a challenge. We are at the limit; there is no room for expansion. This is true not only for graduate student office space, but also faculty office space. Furthermore, all laboratory space at our disposal is committed, and recruitment of any additional faculty in the area of experimental physics would be problematic.
- There is a new communications and coordination challenge to offer remote teaching, now that we do not share administrative support between campuses. The challenges include: scheduling and proctoring simultaneous exams, conducting course evaluations remotely, or collecting and returning assignments (when hardcopy) from the remote campus. This needs to be monitored.

Weaknesses

- The software we use to track admissions, review applications, and create offers at Waterloo is cumbersome, especially in a competitive environment where we must be quick and nimble if we are to attract top students.
- While there is institutional financial support to cover the international tuition differential for PhD students, through IDTS, there is no similar support for MSc students. This creates a gap if we aim to recruit students into our MSc program from the talented pool of international undergraduate students.
- A weakness of the Guelph Physics graduate program is that the level of support from the University puts us at the boundary of sustainability, assuming no further graduate expansion, and creates challenges for sustainability, if we were to expand.
- The need to offer courses over a video link, with a remote instructor, reduces the quality of the graduate student educational experience.

Summary of Key Findings from the External Reviewers

“The degree options provided through the Department’s various physics programs, bolstered by the partnerships with the Institute of Quantum Computing (IQC) and the Perimeter Institute for Theoretical Physics, are providing undergraduate and graduate students with the training and skills they need to attain a competitive edge for careers based in the high-tech sector, as well as equipping them with knowledge and skills for many other career opportunities in the government and private sectors. While the learning environment of the Department is largely positive, there do appear to be some underlying issues that are affecting the intellectual and social climate of the Department and limiting it as a cohesive unit.”

Program Response to External Reviewers’ Recommendations

- 1. Student Experience:** We advise the Department to initiate and prioritize efforts to establish and strengthen a sense of community for students and faculty by widespread adoption of EDI practices and creating more informal opportunities for student interaction with faculty and other students outside of the classroom. To achieve this, we recommend a faculty retreat to discuss ways to improve the Department student experience following an open and honest discussion which includes students of the major issues. A high faculty participation rate in the process is essential, so the retreat should be designed to include social and restorative activities.

Program Response

The department recognizes the need to promote a positive experience for our undergraduate and graduate students within and beyond the classroom. The Undergraduate Experience Committee was formed several years ago to address this issue. The committee has sponsored events including doughnuts and coffee breaks during final exams, a Halloween party, and other events as part of its broader mandate. However, the need for more frequent and inclusive events celebrating the diversity of our students led us to hire a new staff member who has student events and wellbeing as part of their portfolio. They will work with Associate Deans Heidi Engelhardt and Jen Parks and Ben Smith, Science Engagement Officer, to develop new programming and promote student wellness. New initiatives in 2024 included a Ramadan emergence feast on the last day at sundown and an undergraduate games night. New events are planned in future. In Spring 2025, the Department held a teaching retreat to discuss teaching and learning alongside student experience. The retreat discussed solutions to teaching courses to our student body, which we recognize now consists of students with a wide range of backgrounds, learning skills and goals, especially apparent post-Pandemic. This discussion coincided with a broad-ranging curriculum review with the goal of providing more flexible degree programs for students with diverse backgrounds and career aspirations.

Furthermore, the department has completely overhauled its student advising structure using professional administrative support to replace advising that was formerly a part of service activity performed by faculty members. This has been a resounding success, with student feedback indicating that their advising needs are being met to a far higher standard in terms of information and response time.

We have initiated EDI training for Faculty and Staff within the department. Two sessions were held in the 2024-25 year in hybrid form to maximize attendance. Similar training for graduate and undergraduate students in the department is planned for 2025-26, and is also planned to be adopted widely in the Faculty of Science.

The issue of Department cohesiveness has been discussed broadly by all faculty in producing the Future of Physics report (released in Spring 2024). This report has provided a strong basis for planning the future direction of research activity within the department. As an example of impact, the report recommended Biophysics as a research area in which to grow and was actively supported by the entire department through a Faculty search in 2024-25. Ultimately, the recruitment process was unsuccessful, however, future hires and direction have broad support from all faculty members because of this planning process.

Dean's Response (University of Waterloo)

The Faculty of Science supports the program response and the structural and procedural changes made in the Faculty of Science support the approach proposed by the department.

Dean's Response (University of Guelph)

N/A - This recommendation is specific to the University of Waterloo.

- 2. Teaching Support:** To help alleviate student concerns with uniformity in course content and grading and to reduce the teaching demands placed on instructors, we encourage the Department to establish a document management system to archive general and course-specific information, such as grade distributions, lecture slides, teaching notes, tests and exams which faculty could consult while preparing and delivering their courses.

Program Response

Course outlines (syllabi) are collected each term in a standard format available to all instructors and students using the institutional platform outline.uwaterloo.ca. While such course outlines and teaching goals are available to all, notes, slides, exams, and quizzes could previously only be accessed by request from the course instructor. As of winter 2025, we are now implementing a process to proactively share prior course resources on LEARN, using LEARN course development shells. Such course shells will never have students enrolled but will be shared by instructors (past and present) of each course in our many programs. This will make course content broadly available to all who are expected to teach them and easily copied into active course shells on LEARN. It is hoped that this will improve course consistency and quality as best practices and content are widely shared.

Dean's Response (University of Waterloo)

The Faculty of Science supports the program response.

Dean's Response (University of Guelph)

The College of Engineering and Physical Sciences supports the program response. As at UWaterloo, course instructors at Guelph are not required to publish their exams, quizzes and lecture notes, but they are receptive to calls for these materials from other instructors.

- 3. Joint Graduate Studies Physics Program with Guelph:** The joint graduate program is highly valued at Guelph and is viewed positively at Waterloo. We encourage faculty at Waterloo and

Guelph who are teaching joint core graduate courses to teach one in-class lecture per week at the other institution and hold an in-person office hour on the same day to strengthen this collaborative effort and better serve students. To encourage this, faculty should be recognized in their teaching evaluations and compensated for this extra commitment when assigning Department teaching and service roles.

Program Response

This idea has gained some traction in the past. Many instructors take effort to teach and hold office hours at both institutions. However, we have no mechanism other than paying for transportation costs to compensate faculty to teach at both campuses. The availability of high-quality remote connectivity via Zoom and Teams has rendered the once innovative “Link Room” classrooms obsolete and has disincentivized the need to travel between campuses. Nevertheless, we will continue to encourage instructors spend time on both campuses.

Dean’s Response (University of Waterloo)

Distance, whether across campus or at a distance, is one of the greatest barriers to collaboration and partnerships. In support of the program response, we will ensure space and encourage instructors to spend time on both campuses in addition to greater online connections.

Dean’s Response (University of Guelph)

In support of program response, we will encourage instructors to spend time on both campuses. At UoG, there is dedicated space that can be accessed regularly, within the MacLaughlin Library, currently underutilized by the Physics Department. Certainly, instructors and students can be encouraged to attend an in-person common lecture and Q&A/office hours session twice a semester, per course.

- 4. Biological and Medical Physics Program:** The Department should continue to examine the requirements and nature of this program, which remains the smallest of the major undergraduate programs administered by the department. Hiring additional research faculty in a relevant area might help to strengthen this program and attract a higher number of students.

Program Response

Our failure to grow the Biological and Medical Physics program has vexed the department for some time. We have streamlined the curriculum, recast the program, and readvertised it as Biological and Medical Physics program. These efforts have thus far failed to produce increased enrollments. With the possibility of a new hospital build on North Campus in future years, the Chair and Dean are in discussion about minting a new MSc Program in Medical Physics. The inauguration of this program would include at least one faculty position in Medical Physics. As of winter 2025, a proposal has been developed for the new MSc program in Medical Physics and is now undergoing review at the institutional level. Additionally, the Future of Physics committee has made recommendations about future faculty hiring priorities including hiring in Biophysics. A search was conducted in 2024-25 although the position was not filled. The current institutional hiring freeze is slowing decisions on next steps in this area.

Dean's Response (University of Waterloo)

The lack of growth in the Biological and Medical Physics program is largely associated with historical approaches to marketing and recruitment by the Faculty of Science and the University of Waterloo. The structural, procedural and marketing changes that have been made in the last year were in part made to address this issue that has impacted most programs across the Faculty of Science.

Dean's Response (University of Guelph)

N/A - This recommendation is specific to the University of Waterloo.

- 5. Graduate Courses:** The Graduate Academic Calendar should accurately reflect which courses are being taught. Consideration should be given to removing courses that are not taught at least every three years, so that students know which courses are likely to be available during the pursuit of their degree. We also suggest distributing a survey to graduate students to determine which graduate courses to offer in the next academic year.

Program Response

The large number of phantom courses appearing in our catalog from past years has been a topic of discussion for some time. Our Associate Chair, Graduate Studies is pruning away from the on-line catalog courses unlikely to be offered in future, and they are clarifying those being offered infrequently.

Dean's Response (University of Waterloo)

The Faculty of Science is supportive of the Program Response.

Dean's Response (University of Guelph)

The Physics Department at Guelph has consistently cleaned the course inventory over the last few years, and they will continue to monitor it as needed.

- 6. Administrative Support:** We understand that the administrative staff experience high job demands and staff turnover has been high. To maintain the Department's business continuity, we suggest establishing standard operating procedures for all administrative roles, perhaps in wiki format, which staff can regularly update as required. We also suggest that the Faculty of Science provide common support systems for data and document management to all Science departments.

Program Response

Staff roles are clearly defined as they were at the time the committee visited. The Administrative Officer holds full staff meetings weekly, and they are in daily contact with each staff member. We do not see communication and cognizance of responsibilities at issue. In our opinion, the high job demands are an issue of resourcing that has been slow to follow the explosion in our student population. Moreover, strain due to staff turnover was also high due to the competitive job market on campus. The provision of adequate resources, which we believe caused the enormous strain is now being alleviated by Dean Houser. However, budget cuts continue to compete with our need to provide adequate and permanent administrative support, and this must continue to be recognized in future budget discussions.

The administrative staff have made extensive use of Departmental Teams Channels as a platform to share and store information about roles, including training and standard operating procedures documentation for new staff members. These documents are continually updated and added to as administrative processes at the department, faculty and university evolve. Common databases and file sharing across the faculty would help avoid redundancy and create efficiencies. The department has its own graduate database, but other faculty systems would be welcome additions.

Dean's Response (University of Waterloo)

The Faculty of Science is committed to providing the resources and support provided by the departments and schools. The budget and resource decisions of the past created great strain in several departments and while we are finding the means to provide the necessary

resources, the current financial position of the institution (and most other institutions in Ontario) will make this increasingly difficult.

Dean's Response (University of Guelph)

N/A - This recommendation is specific to the University of Waterloo.

- 7. Physics Building:** In the absence of funds to construct a new building in the near term, the Faculty and University should take concrete steps to address the deferred maintenance issues that plague the current building. Particular attention to water leaks and HVAC issues should be paid.

Program Response

Modern space is the highest priority issue for the department. The lack of sufficient quality space to house our faculty, students, and staff has a negative impact on the quality of the student experience and the academic programming that we can offer. It also impacts our ability to recruit top talent (students and faculty) to the department. We continue to raise this issue with Faculty of Science and the broader University administration and are happy to work with any partners to make progress in this area. In lieu of a new building or major renovation to the physics building, small cost-effective improvements to work spaces are being implemented.

Dean's Response (University of Waterloo)

As was noted in the on-campus meetings, the Faculty of Science did not prioritize space in the department, and the reserve funding previously promised to the department was over-promised by the former administration. There is a need to provide the department with greater and renewed space, but the collision of past decisions (by the administration) and the current financial position of the institution, means that advancement is going to be the primary means to address this issue.

Dean's Response (University of Guelph)

N/A - This recommendation is specific to the University of Waterloo.

Recommendations Not Selected for Implementation

N/A

Implementation Plan

	Recommendations	Proposed Actions	Responsibility for Leading and Resourcing (if applicable) the Actions	Timeline for addressing Recommendations
1.	Student Experience The Department should promote community by using EDI practices and encouraging casual interactions between students and faculty. To do this effectively, we suggest a faculty retreat for open discussions and including students in addressing important issues. High faculty participation is essential, and the retreat should include social and restorative activities.	Practices have been implemented. Retreat occurred in Winter 2025, Curriculum changes in 2025-26	Experience Committee, EDI Committee.	By necessity, this is an ongoing initiative and there will always be opportunities for improvements. Some initiatives have been completed (Retreat in W25) started and will be ongoing (EDI training), Curriculum changes have been approved by Dept. and are making their way through approval channels.
2.	Teaching Support Create a document system to store course-specific information such as grade distributions, lecture slides, teaching notes, tests and exam address student concerns and reduce the workload on instructors.	Course materials will be collected and stored on LEARN in course development shells.	Associate Chair, Undergraduate and Undergraduate Adviser.	End of 2025
3.	Joint Graduate Studies Physics Program with Guelph To enhance the joint graduate program between Guelph and Waterloo, we suggest faculty teaching core courses at both universities offer one in-person lecture per week at the other school and hold office hours on the same day. This collaboration	Encourage faculty to hold joint graduate classes and office hours at both campuses.	Associate Chairs, Graduate Waterloo and Guelph	Continuing

	should be recognized and compensated in teaching evaluations and service roles.			
4.	Biological and Medical Physics Program The Department should continue to examine the requirements and nature of this program, which remains the smallest of the major undergraduate programs administered by the department. Hiring additional research faculty in a relevant area might help to strengthen this program and attract a higher number of students.	Changes to this program, including a name change were completed in the past few years. Faculty hires in this area are being considered by the Future of Physics Committee. Faculty growth in this area should include a plan to recruit graduate and undergraduate students to the program.	Chair in consultation with the department.	Ongoing
5.	Graduate Courses The Graduate Academic Calendar should accurately reflect which courses are being taught. Update the Graduate Academic Calendar to list courses currently taught. Remove those not taught every three years. Survey graduate students to decide which courses to offer next year.	Clean-up the course catalog in consultation with Executive Committee.	Associate Chairs, Graduate Waterloo and Guelph	ongoing
6.	Administrative Support To address high job demands and staff turnover, create standard procedures for administrative roles that staff can update. Also, implement common data and document management systems for science departments.	See comments above.	Department Administrator and Chair	End of 2025
7.	Physics Building In the absence of funds to construct a new building in the near term, the Faculty and University should take concrete steps to address the deferred maintenance issues that plague the current building. Particular attention to water leaks and HVAC issues should be paid.	This should be the highest priority recommendation on the list.	Chair, Dean, Advancement Director, Provost, President	By Fall 2029

The Department Chair/Director, in consultation with the Dean of the Faculty shall be responsible for the Implementation Plan.

Date of next program review _____

2026-2027

Date

Signatures of Approval



Please keep this document in Word version. We do require you to sign it or demonstrate your approval. If you have issues with signing a Word document, please confirm your approval by adding the following wording when you send back the document by email "I hereby approve the attached document." We will collect formal signatures at a later stage on a pdf version.



(Robert W. Hill, Acting Chair, Physics and Astronomy)

June 27, 2025

Chair/Director

Date

AFIW Administrative Dean/Head (*For AFIW programs only*)

Date

E-Signature

June 28, 2025

Faculty Dean

Date

Note: AFIW programs fall under the Faculty of ARTS; however, the Dean does not have fiscal control nor authority over staffing and administration of the program.



December 16, 2024

Associate Vice-President, Academic

Date

(For undergraduate and augmented programs)

On behalf of the Associate Vice-President, Graduate Studies and Postdoctoral Affairs
