Policy Handbook

Graduate Program in Medical Physics

Committee on Medical Physics

The University of Chicago

February 2020

Page 2 of 34

LIST OF POLICIES

- GPMP Policy 1: Course Requirements for the Ph.D. Degree
- GPMP Policy 2: Courses and Requirements for the M.S. Degree
- GPMP Policy 3: Required Core Courses
- GPMP Policy 4: Course Registration Procedure
- GPMP Policy 5: Guidelines for Research Rotations for First-Year Students
- GPMP Policy 6: Comprehensive Exam
- GPMP Policy 7: Dissertation Advisory Committee
- GPMP Policy 8: Ph.D. Dissertation Proposal Hearing
- GPMP Policy 9: Ph.D. Dissertation Defense
- GPMP Policy 10: Student Faculty Review
- GPMP Policy 11: BSD Student Transfer and Withdrawal Policies (reworded slightly for GPMP relevance)
- GPMP Policy 12: Reporting Progress Status on GPMP Wiki
- GPMP Policy 13: Student Travel Aid
- GPMP Policy 14: Student Awards
- GPMP Policy 15: Student Award to Medical Physics Faculty
- GPMP Policy 16: Student Body Co-Presidents and Representatives
- GPMP Policy 17: Student Outside Employment
- GPMP Policy 18: Student Professional Society Membership
- GPMP Policy 19: Student Vacations
- GPMP Policy 20: Pass/Fail Grades
- GPMP Policy 21: Standing Committee Mission Statements and Student Representation
- GPMP Policy 22: Student Funding Acknowledgment
- GPMP Policy 23: Online Courses
- GPMP Policy 24: Student Dissertations

GPMP Policy 1: Course Requirements for the Ph.D. Degree Date: Summer 2009 (updated September 2013)

Students must complete a program of study in the Graduate Program in Medical Physics that provides a satisfactory level of general competence in Medical Physics and suitable specialization in a specific area.

Course requirements for Ph.D. students in the Graduate Program in Medical Physics include passage of at least 13 quarter courses with a "B" average and with no grade lower than "C". These must include the twelve (12) basic required courses and one (1) elective course (see GPMP Policy 3 below). The elective course must be approved by the student's GPMP advisor. Each quarter students will register in a research course for a number of credits sufficient to achieve full-time student status (when combined with any non-research courses in which the student is registered). First-year students must complete at least two (but no more than four) one-quarter research rotations in different labs to exposure them to a variety of topics in medical physics (see GPMP Policy 5 below).

In addition to the requirements of the Program, students need to meet the requirements of the Biological Sciences Division. All GPMP students must fulfill the evaluated teaching requirement of the Biological Science Division. This can be done by successfully completing two teaching assistantships (which cannot be in the same course] or by successfully completing one teaching assistantship and the TA training course offered by the Division. In addition, all students must take the non-credit ethics course offered by the Division and the non-credit ethics course offered by the Program.

During the first 6 months in the GPMP, a student may petition to the Curriculum Committee for a course waiver on the basis of coursework or experience gained in previous educational programs. Because of the 6-month window, it is important that each student review prior coursework with the program director upon entering the GPMP in order to determine whether submission of a waiver request is appropriate.

No waiver will be considered for any of the required courses with the exception of:

- a. Statistics
- b. MPHY 35601 Anatomical Structure and Physiological Function
- c. MPHY 35900 Cancer and Radiation Biology
- c. MPHY 39700 Health Physics

Also, if the student took one of the required GPMP courses prior to entering the program and the content of the course has not changed, the student may request a waiver.

All waivers will be waiver with credit (the student will not be required to take another course to replace the waived course). The Curriculum Committee will consider requests from each student and determine the appropriate action: (1) no waiver or (2) waiver with course credit.

Students entering the program with a Master's degree will have the one elective course waived (with credit).

This approach began with students entering Autumn 2013.

GPMP Policy 2: Courses and Requirements for the M.S. Degree Date: Winter 2010 (updated November 2013)

The Graduate Program in Medical Physics only admits students who intend to pursue the Ph.D. degree. Should circumstances alter this intention after matriculation, a terminal M.S. degree may be awarded to students who fulfill the following requirements:

- (a) Receiving passing grades in the 12 basic required courses, with an average of "B" and with no grade lower than "C". During the first 6 months in the GPMP, a student may petition to the Curriculum Committee for course waiver on the basis of coursework or experience gained in previous educational programs. The criteria for such waivers are the same as those described above for the Ph.D. degree.
- (b) Passage of the Comprehensive Exam at the M.S. level or higher.
- (c) Satisfactory completion of one of the following, depending on the student's interests and career goals:
 - 1. A thesis based on some aspects of scientific research that can be completed in two or three quarters.
 - 2. A series of seven (7) detailed reports on work performed in a radiological physics internship of approximately one-half time for three quarters. During this internship the student will calibrate diagnostic x-ray generators, radiation therapy machines, and radionuclides; measure physical parameters for the quality control of diagnostic protection; and help plan radiation treatments. The reports are to be similar to those that would be filed by a professional medical physicist acting as a consultant to a clinical Department of Diagnostic Radiology, Radiation Therapy, or Nuclear Medicine. This option is intended to provide additional preparation for professional certification in radiological physics by the American Board of Radiology.

After all other requirements for the M.S. degree have been completed, an M.S. candidate will be examined orally by the Medical Physics faculty on the content of the required thesis or series of reports. The student must communicate with the Graduate Education Administrator to arrange a date and room for the Final Examination at least two weeks and two days prior to the earliest suggested examination date, so that the Graduate Education Administrator may confirm the date/location and circulate the thesis or series of reports to the entire GPMP faculty no later than two weeks prior to the examination.

After the Final Examination the faculty will meet to assign a grade of "Pass" or "Fail". A passing grade must be approved by at least two-thirds of the faculty present at the Final Examination. In the case of failure, the student will be required to repeat the Final Examination and may be required to modify the thesis or series for reports. The Final Examination can be repeated once.

GPMP Policy 3: Required Core Courses

Date: Winter 2010 (updated September 2012)

The required courses are listed below in the order in which they usually are taken by GPMP students. Course descriptions can be found in the Medical Physics portion of the University <u>online course catalog (http://catalogs.uchicago.edu/divisions/radiol-courses.html</u>)

Quarter	Year 1	Year 2	
Autumn	Interactions of Ionizing Radiation with Matter (MPHY 35000)	Anatomical Structure of the Body (MPHY 35601)	
	Mathematics for Medical Physicists (MPHY 34900)	Thesis research	
	Research rotation		
Winter	Physics of Radiation Therapy (MPHY 35100)	Cancer & Radiation Biology (MPHY 35900)*	
	Practicum in Physics of Radiation Therapy (MPHY 34400)	Thesis research	
	Research rotation		
	Biological Sciences Division Ethics: Responsible, Rigorous, and Reproducible Conduct of Research (non-credit)		
Spring	Physics of Medical Imaging I (MPHY 38600)	Health Physics (MPHY 39700)	
	Practicum in the Physics of Medical Imaging I (MPHY 34200)	Thesis research	
	Research rotation		
Summer	Physics of Medical Imaging II (MPHY 38700)	Thesis research	
	Practicum in the Physics of Medical Imaging II (MPHY 34300)		
	Research rotation		

A statistics course and a single elective course are also required; these courses are usually taken after Year 2 and are selected based on topics relevant to the student's dissertation research. The Biological Sciences Division requires two quarter-long teaching assistantships, which are usually fulfilled during Year 2. In Year 5, students are required to take Bioethics for Medical Physicists

(MPHY 341). When students are enrolled in fewer than 3 courses in any given quarter, students enroll in an appropriate amount of research credit to achieve full-time student status.

* A college-level biology course is strongly recommended as preparation for MPHY 35900. If a student enters the GPMP without such a course, he or she will be able to take the course at the University; however, this college-level biology course will not count toward GPMP degree requirements.

GPMP Policy 4: Course Registration Procedure

Date: Winter 2010 (updated September 2011)

Process for registration for each quarter includes:

- (a) Student discusses courses with the faculty advisor and has advisor sign the course registration form
- (b) Student submits course request online (via grad-registration.uchicago.edu)
- (c) Student provides a course registration form signed by the faculty advisor to the Graduate Education Administrator
- (d) The Graduate Education Administrator officially registers the student after receiving the signed registration form
- (e) Late registration: If a student has not registered by the deadline set by the Graduate Affairs Office, he/she will be assessed a late-registration fee by the Division. <u>NOTE</u>: BSD regulations may require stipend checks to be withheld until registration is complete and the late fee is paid.

<u>NOTE</u>: If a student adds or drops a course, an updated and signed registration form must be submitted to the Graduate Education Administrator within university and divisional deadlines.

GPMP Policy 5: Guidelines for Research Rotations for First-Year Students Date: Autumn 2009 (updated October 2013, December 2018)

These guidelines have been developed for first-year graduate students in the Committee on Medical Physics. To give students exposure to different topics in medical physics, first-year students are expected to complete at least two one-quarter research rotations in different labs during their first four quarters. The titles and numbers associated with the topic-specific research rotation courses are listed below.

MPHY 41800	Research in Advanced Tomographic Imaging
MPHY 41900	Research in Computer-Aided Diagnosis
MPHY 42000	Research in the Physics of Nuclear Medicine
MPHY 42100	Research in the Physics of Diagnostic Radiology
MPHY 42200	Research in the Physics of Radiation Therapy
MPHY 42300	Research in the Physics of MRI
MPHY 42400	Research in Image-Guided Radiation Therapy
MPHY 42500	Research in Quantitative Imaging
MPHY 42600	Research in Computer-Aided Diagnosis/Radiomics
MPHY 42700	Research in Molecular Imaging

For each research rotation, a summary of the research project, written according to the guidelines described at the end of this Policy, is required in order to receive a grade. The written summary is due by the beginning of the following quarter and must be submitted electronically to the faculty member supervising the research. All questions regarding the written summary should be directed to the faculty member supervising the research project. The summary report of each research rotation must be written in the <u>style of a Medical Physics research article</u> (<u>http://www.medphys.org/NewInstructions.pdf</u>). Students are encouraged to identify a rotation project and supervisor for the following quarter by the 8th Week of the current quarter (which is when registration for the following quarter occurs); early identification of the following quarter's project will allow the student and supervisor to complete all administrative tasks (e.g., computer account set-up, IRB protocol amendment) before the quarter begins.

The student may commit to a lab for their thesis research as soon as Quarter 3, but no later than Quarter 5; the student will enroll in topic-specific research courses until a thesis lab has been selected (hence, between 2 and 4 research rotations will result). After committing to a thesis lab, the student will enroll in MPHY 416 "Pre-Candidacy Research in Medical Physics" each quarter until the successful defense of the thesis proposal (which is to occur no later than Quarter 12), after which time the student will enroll in MPHY 417 "Dissertation Research in Medical Physics" each quarter Physics" each quarter until graduation.

Research Rotation Report Guidelines:

- Title: This should briefly describe the focus of the paper or highlight a significant result.
- Abstract: 200-word abstract which summarizes the significance of the research and the main conclusions that were drawn from the results.

- Introduction: This section should identify "the issue or problem addressed in the article, describe why it is important, and provide a summary of the approach to the issue or problem." This should include a brief summary of the relevant literature in order to "provide the context for a reader who is not intimately familiar with the issue or problem addressed in the article." (*15-20% of total length*)
- **Methods and Materials**: This section should provide a detailed description of the research methods undertaken to carry out the research. Any assumptions made in the use of software or statistical methods should be clearly stated. The criteria for eliminating data from the study should also be described. Materials used in the research should also be described. Software packages should include version numbers. (*1/3 of total length*)
- **Results**: This section should describe the results obtained from the study and should contain a critical analysis of the findings. Results should be appropriately summarized in one or more tables and/or graphs. All reported results should be accompanied by appropriate measures of uncertainty. (*1/3 of total length*)
- **Conclusions**: This section should briefly summarize the conclusions that were systematically drawn from the results. If the results are too preliminary to serve as a basis for conclusions, then this section should include a description of the studies that would need to be carried out in the future in order to lead to meaningful conclusions. (20% of total length)

Formatting and Length:

- The title page must include the summary title, the student's name, and the advisor's name.
- The 200-word abstract should appear on the next page.
- The main body of the paper should be at least 5 pages and no more than 10 pages *double-spaced and 12 point font.* This total includes the Introduction, Methods and Materials, Results, and Conclusions sections. This does *not* include any figures, which should be placed after the main body.
- The references section must be formatted in the style described in the *Medical Physics* Instruction to Authors (AIP journal style).

GPMP Policy 6: Comprehensive Exam

Date: Autumn 2009 (updated September 2012)

After the end of the first academic year, each student will take a "Comprehensive Examination" covering the material in courses studied up to that time in addition to basic undergraduate physics. The student should demonstrate both competency in medical physics and the ability to think through a posed situation. This examination will consist of three components: a "closed-book" written examination lasting approximately five hours, a 2-day "open-book" written examination, and a one-hour oral examination attended by the medical physics faculty, with appropriate breaks between portions of the exam. The comprehensive exam is offered during September after the first year. Each student's written exam answers, research-rotation reports, and University of Chicago transcript will be made available to the faculty during the oral portion of that student's exam.

The Comprehensive Examination is intended to assess the ability of the student to satisfactorily complete the requirements for the M.S. or Ph.D degree. After this examination, the faculty will assign, by plurality vote, one of three grades:

- "Pass at the Ph.D. Level": The student may continue to work toward either the M.S. or Ph.D degree;
- "Pass at the M.S. Level": The student may continue to work toward the M.S. degree;
- "Fail": The student will be dismissed from the GPMP and from the Division of the Biological Sciences (although the student may petition for a single retake).

This examination will be offered only once each year. If a student achieves passage at the M.S. level or fails the exam at the first attempt, he/she may petition to be allowed to retake the exam before the end of the Winter Quarter. Such petitions must justify the student's request for permission to retake the exam and must be submitted to the Program Director in writing within one month of the student's initial taking of the exam and approved by a majority of the Committee faculty. Only one opportunity to retake the exam will be permitted.

GPMP Policy 7: Dissertation Advisory Committee

Date: Autumn 2009 (updated September 2011, April 2016, December 2018, February 2020)

After the student has passed the Comprehensive Examination at the Ph.D. level, the student must develop a dissertation topic and form a Dissertation Advisory Committee. The advisory committee will include a faculty Dissertation Advisor and at least two other GPMP faculty members. Faculty from outside the GPMP or outside the University may also serve on dissertation committees, as appropriate. The committee membership must be approved by the Program Director.

It is recommended that students complete formation of a Dissertation Advisory Committee by the 6th quarter in the GPMP. Subsequently, students are to hold at least two committee meetings per year (one during the first six months of a calendar year, and one during the second six months of the calendar year). A summary of each committee meeting should be submitted to the Graduate Education Administrator by one of the committee members for inclusion in the student's record.

The membership of the Dissertation Advisory Committee may require alteration as the research project evolves. The Committee may be modified at any time in consultation with the Dissertation Advisor, with notice given to the Program Director.

A chair of the Dissertation Advisory Committee will be identified from among those committee members who are GPMP faculty members; the committee chair must be different from the Dissertation Advisor. The chair is responsible for chairing the twice yearly committee meetings (and providing to the Graduate Education Administrator a written summary of each committee meeting) and for communicating to the Program Director the committee's approval of the proposal and thesis.

GPMP Policy 8: Ph.D. Dissertation Proposal Hearing Date: Autumn 2009 (updated September 2011, March 2016, December 2018)

With guidance from the Dissertation Advisory Committee, the student will formulate a written Dissertation Research Proposal that describes the overall goals and specific aims of the proposed research, the background of the problem, the methods or procedures to be used, the anticipated results, and the expected significance of the work. The intent of the Research Proposal is to give students the opportunity to describe their research to GPMP faculty for comment, advice, and approval, to expose students to the writing style and expected content of a scientific grant application, and to encourage students to actually submit the Proposal (or an adaptation thereof) to a funding agency for pre-doctoral support. Consequently, the Proposal must be formatted in accordance with a federal grant opportunity for which the student intends to apply (e.g., the six pages of science plus one-page specific aims section of an NIH F31 application) or a 10-page application if the student intends to use the Proposal to apply for non-federal funding.

After the Dissertation Research Proposal has been approved by a majority of the student's Dissertation Advisory Committee, the student will participate in a "Dissertation Research Proposal Hearing." The Committee's approval of the proposal must be communicated to the Program Director by the student's advisor and the student must communicate with the Graduate Education Administrator to arrange a hearing date and room at least two weeks and two days prior to the earliest suggested hearing date, so that the Graduate Education Administrator may confirm the date/location and circulate the proposal to the entire GPMP faculty no later than two weeks prior to the hearing. At the hearing the faculty will determine the suitability of the proposed research topic for a Ph.D. dissertation in the GPMP and will evaluate the extent to which the student is prepared to conduct the proposed research. After the hearing, the faculty will vote to approve or disapprove the proposal.

If the student passes, he or she must complete a "Ph.D./M.S. Candidacy" form, which can be obtained from the <u>wiki page at http://128.135.68.150:2317/FormsAndDocuments</u> in the section entitled "Forms," and must send it to the Graduate Education Administrator, who will submit all completed forms to the Graduate Affairs Office. <u>NOTE</u>: The form must be reviewed and approved by the student's faculty advisor before it is sent to the Graduate Education Administrator.

If the Dissertation Research Proposal is disapproved, the Program Director will inform the student and the Dissertation Advisory Committee, in writing, as to the reasons for disapproval. The student will then be expected to consult with the Dissertation Advisory Committee concerning revision of the Dissertation Research Proposal or withdrawal from the GPMP. In the event that the student wishes to repeat the Proposal Hearing and the Dissertation Advisory Committee approves, the student must submit a petition in writing to the Program Director within one month of the failed hearing. The petition must justify the student's request to repeat the Proposal Hearing and must be approved by a majority of the Committee members; the petition should include the expected quarter during which the repeat Proposal Hearing will occur. Only one opportunity to repeat the Dissertation Proposal Hearing will be permitted.

It is expected that students will pass their proposal hearing by the end of their 10th quarter in the GPMP.

GPMP Policy 9: Ph.D. Dissertation Defense Date: Winter 2010 (updated September 2012)

After all other requirements for the Ph.D. degree have been completed, and after the Ph.D. dissertation has been approved by a majority of the Dissertation Advisory Committee, the Ph.D. candidate will be examined orally by the Medical Physics faculty on the content of the dissertation and the specialized area of knowledge that it concerns. The committee's approval of the dissertation must be communicated to the Program Director by the student's advisor and the student must communicate with the Graduate Education Administrator to arrange a date and room for the Dissertation Defense Hearing at least **two weeks and two days** prior to the earliest suggested date for the hearing, so that the Graduate Education Administrator may confirm the date/location and circulate the dissertation (in a format acceptable to the University Dissertation Office) to the entire GPMP faculty no later than two weeks prior to the hearing. At the discretion of the faculty, one or more Guest Examiners from outside the Graduate Program in Medical Physics may be invited to participate.

After the Final Examination the faculty will meet to assign a grade of "Pass" or "Fail". A passing grade must be approved by at least two-thirds of the faculty present at the Final Examination. If a student receives a "Pass", the Graduate Education Administrator will complete and submit a report of Final Examination for the Degree of Ph.D.

In case of failure, the Program Director will inform the student in writing as to the reasons that a failing grade was assigned. In the event that the student wishes to repeat the Proposal Hearing and the Dissertation Advisory Committee approves, the student must submit a petition in writing to the Program Director within one month of the failure to pass. Such petitions must justify the student's request for permission to repeat the Final Examination and must be approved by a majority of the Committee faculty. Only one opportunity to repeat the Final Examination will be permitted. The Final Examination cannot be repeated less than two months or more than one year after failure.

Note that the University and the Division have requirements with a timeline for a student to graduate in a given quarter. Students should be knowledgeable about these and plan their dissertation defense accordingly.

Page 14 of 34

GPMP Policy 10: Student Faculty Review

Date: Summer 2009 (updated September 2011)

GPMP students whose progress toward graduation appears to be problematic will be evaluated at a hearing attended by the student and the GPMP faculty. This review process is intended to assist any such students, to identify a sequence of benchmarks for their continuation in the GPMP, and to establish plans for monitoring their future progress.

A Student Faculty Review may be initiated by any of the following circumstances, or when deemed necessary by a student's advisor in consultation with the Program Director, Co-Director and other faculty:

- when a student fails to comply with grade and/or exam requirements
- when a student fails to comply with timing guidelines for:
 - forming a Dissertation Advisory Committee
 - holding regular Dissertation Advisory Committee meetings
 - holding her or his proposal hearing
- when a student enters Year 7 in the GPMP.

If a student has not formed a Dissertation Advisory Committee in a timely fashion after passing the Comprehensive Examination at the Ph.D. level, an interim committee will be formed consisting of the advisor, the Director and Co-Director of the Program, and the Chair of either the Curriculum Committee or the Admissions Committee. This committee will be charged to work with the student and the student's advisor to establish a timeline to maintain compliance, with specific consequences for failure to meet the goals specified in the timeline.

Table. Summary of milestones.

Milestone	Quarter	
Comprehensive Exam	End Quarter 4 (Summer Year 1)	
Select advisor	Beginning Quarter 5 (Autumn Year 2)	
Form Ph.D. advisory committee	End Quarter 6 (Winter Year 2)	
Ph.D. advisory committee meetings	Bi-annually until graduation	
Proposal hearing	End Quarter 10 (Winter Year 3)	
Ph.D. thesis defense	Quarter 23 (Spring Year 6)	

GPMP Policy 11: BSD Student Transfer and Withdrawal Policies (reworded slightly here for GPMP relevance)

Date: Winter 2011 (updated September 2011)

Changing Labs and/or Programs

A student may, under extenuating circumstances, transfer from one laboratory to another within the same degree-granting unit or from one academic program within the BSD to another. Students may also choose to apply for acceptance into a program within another Division.

Lab transfers within a given degree-granting unit may be done informally with the consent of the Program Director, departing and receiving faculty sponsors. The BSD Office of Graduate and Postdoctoral Affairs must be informed of all proceedings and decisions so that student records are accurately maintained and future funding can be adjusted. Transfers should be done early enough in a student's tenure in the research phase not to cause an inappropriate elongation of time to degree. The new sponsor must commit to fund the student for the duration of dissertation work if the student does not have an independent award or institutional funding. A new or modified dissertation committee should be convened within two quarters to review and approve the new dissertation proposal. Every effort should be made by the new academic program to monitor the student's progress diligently to ensure that the new arrangement will come to fruition as soon as possible.

If a student transfers from one degree-granting unit to another, this change should be early enough in the student's tenure in the program so that degree requirements (courses, prelims, etc.) of the new academic unit can be met. Only students in good academic standing are eligible for such transfers. Academic transfer usually entails a review process of the new degree-granting unit (e.g. by the Curriculum Committee) for assessment of academic deficiencies. To change academic unit, a Departmental transfer form, signed by the Chairs of the departing and receiving departments must be filed in the Office of Graduate and Postdoctoral Affairs. The new academic unit and the sponsor assume responsibility for funding the student until completion of the degree. The student's progress should be diligently monitored to assure timely progress to degree.

Entry to a new Division or School will entail submission of a new application or forwarding of the original graduate application materials for review by the appropriate degree-granting unit within that Division or School. The departing and receiving Deans (Deans of Students) must give written approval for any subsequent transfer.

Proceeding to Candidacy

Students must maintain a B (or Pass) average in didactic coursework in order to continue in their graduate program. If a student's coursework falls below this minimum, she/he must petition the curriculum committee of their degree-granting unit to be able to continue in the graduate program.

At the end of the first or second year, depending on the unit, many students take a comprehensive examination. This may be called a preliminary or qualifying exam and may be in one or more parts. Details of the exams are unit specific. Students who fail this exam should be offered the option of a second opportunity to attempt the exam. Retakes must be completed by the end of the quarter following the one in which the original exam was failed. If the student

does not pass the exam a second time the program will recommend that he/she be dismissed from the program and the Division of Biological Sciences.

Probation and Dismissals

It is expected that Programs will work with students to guide them in choosing laboratory rotations and in selecting a mentor. In some cases an additional rotation may be necessary in order for the student to find an appropriate thesis mentor. However, in cases where students are unable to identify a faculty member willing to act as the thesis advisor their program may recommend that the students be dismissed from the Division of Biological Sciences.

If an advanced student is deemed by the thesis committee to be making insufficient progress, the student should be placed on formal academic probation by their program. Probation requires a clear set of written expectations that are approved by the Program Director to be provided to the student. The time line in which these expectations need to be met should also be clearly stated. If a student is placed on probation, the Program Director must promptly notify the student, the Office of Graduate Affairs, and the student's faculty advisor or Dissertation Advisory Committee chair. The Program Director and the faculty advisor/Dissertation Advisory Committee chair are responsible for assessing whether the terms of the probation period have been adequately met. In cases where a student is unable to meet expectations by the end of the probation period, the program will recommend that the student be dismissed from the Division of Biological Sciences. A recommendation for a student to be dismissed from the BSD graduate Program must be approved by the Associate Dean of Graduate Students, together with a standing Faculty Committee on Student Withdrawals. Students may appeal the recommendation of dismissal in a letter addressed to the Associate Dean of Graduate Students who may convene a formal meeting with the standing Faculty Committee on Student Withdrawals to review this recommendation. Attendance at this meeting will include the student and program faculty. Combined degree students must follow the same policies as the other PhD students.

<u>NOTE</u>: The dismissal of a student from the program must be handled through the Office of Graduate Affairs. The above is a divisional policy, so we are unable to change the associated procedures as we could if only GPMP policies were involved .

GPMP Policy 12: Reporting Progress Status on GPMP Wiki Date: Winter 2010 (updated September 2012)

Students' progress reports are maintained on the password-protected wiki (http://xray.bsd.uchicago.edu/wikis/UCGPMP). Students are required to update their page at least quarterly, as the page is used to ensure compliance to milestones, to assess students' progress, and in selecting the Lanzl Fellowship Award recipient (see Policy 14).

The Graduate Education Administrator will upload to the Wiki summaries of course grades as well as the following information, which must be transmitted to the Graduate Education Administrator in a timely manner:

- Dissertation Advisory Committee meeting summaries transmitted by committee meeting faculty chair
- Dissertation Proposal outcome transmitted by proposal hearing faculty chair
- Defense outcome transmitted by defense hearing faculty chair

Students are responsible for posting:

- Awards
- Abstracts
- Conference proceedings
- Publications
- Up-to-date contact information (office location and on-campus phone number)

GPMP Policy 13: Student Travel Aid

Date: Spring 2009 (updated November 2013, September 2015, September 2017, and July 2018)

Each student will be allowed travel reimbursement from Committee on Medical Physics BSD funds with a limit of \$750 per fiscal year (July 1 - June 30). The following procedures must be followed for travel to be reimbursed:

- Students must use economical transportation and hotel accommodations.
- The Medical Physics travel reimbursement form must be signed by the student's faculty advisor along with receipts, source of supplemental funding (beyond the \$750), and documentation of participation as a presenter (a conference program or abstract) before submitting to the Graduate Education Administrator. With faculty advisor approval, the student need not be a presenter at the meeting if attendance at the meeting benefits the student's education and networking opportunities.
- Request for reimbursement must be submitted within 30 days of return.
- Travel after a student graduates is eligible for the reimbursement if (1) the reimbursement has not yet been used during the fiscal year in which the student graduated, (2) the conference takes place during the fiscal year of the student's graduation or within 6 months after graduation (whichever is longer), and (3) an oral or poster presentation was granted.
- The reimbursement may be used for first-year students to attend the July AAPM meeting (which is in the next fiscal year).

NOTE: Receipt of this travel aid is a reimbursement and should not be considered an "award."

Two additional travel fund mechanisms are available to BSD students, and GPMP students are encouraged to apply as appropriate (see https://gc.uchicago.edu/travel-fund):

1. Dean's Council Travel Award: A \$500 award is available from the BSD; a student may receive these funds only once. The call for applications is sent out twice a year, and the review is performed by members of the Dean's Council.

2. GSA Travel Fund (also known as the Graduate Council Travel Fund through UChicagoGRAD): There are two tiers of funding available on a rolling timeline, basic funding for participating in professional conferences (\$350 in reimbursement) and advanced funding for those presenting original work at academic conferences (\$600 in reimbursement).

GPMP Policy 14: Student Awards

Date: Autumn 2012 (updated April 2016 and September 2018)

Each year the Graduate Program in Medical Physics awards 2 prizes listed below.

Carl J. Vyborny Award for Outstanding Journal Club Presentation

This award is in honor of Carl J. Vyborny, M.D., Ph.D., a graduate of the Medical Physics Graduate Program and a former faculty member in the Committee on Medical Physics and the Department of Radiology, who gave generously of his time to advise students and participate in their research. The award is to recognize the best student Journal Club Presentation each year and will be awarded to one student at the annual Orientation Week Welcome Reception. The student is selected by vote of the student body.

Lawrence H. Lanzl Medical Physics Graduate Fellowship Award

This award is in honor of Lawrence H. Lanzl, Ph.D., who was one of the founders of our Graduate Program. The award is to recognize students with outstanding research abilities and will be awarded to one student at the annual Orientation Week Welcome Reception. In addition to the honor, it will provide funding for one quarter. The winning student is determined based on a rubric that incorporates faculty evaluation of the student's performance at the proposal hearing and publications, awards, and participation at conferences through the student's 12th quarter. Only students who have successfully completed their dissertation research proposal in the current academic year are eligible. Students who fail to hold their proposal hearing by the end of their 12th quarter will not be eligible for the Lanzl Award.

		. 0
Criteria for Scoring	Criteria for Scoring	Criteria for Scoring
Written Proposal	Oral presentation	Answering Questions
- Hypothesis - Significance	- Time - Content	- Accuracy - Confidence Poise
- Approach - Clarity	- Organization - Quality of slides	- Clarity
- Quality of the writing	 Effective use of graphics and figures Delivery Enthusiasm 	

Table. Proposal hearing evaluation criteria for Lanzl Award scoring rubric

GPMP Policy 15: Student Award to Medical Physics Faculty Date: Autumn 2012 (updated Autumn 2017)

Kurt Rossmann Award for Excellence in Teaching

This award honors Kurt Rossmann, Ph.D., a former director of the Section of Radiological Sciences in the Department of Radiology who pioneered modern x-ray imaging research. The award recognizes a continued commitment to, and excellence in, educational instruction both inside and outside the classroom. At the end of each academic year, students will nominate faculty and research staff who have taught at least one lecture in a MPHY course during the past academic year and who have exceled in educational instruction. The students then will vote for the nominee who will receive the award. The Kurt Rossmann Award is announced and presented at the annual GPMP Welcome Reception.

University Faculty Award for Excellence in Graduate Teaching and Mentoring

In addition to the Kurt Rossmann Award for Excellence in Teaching, students may nominate a faculty member for this University-wide award. The University of Chicago annually recognizes and honors tenure-track faculty in the Biological Sciences, Divinity School, Humanities, Physical Sciences, and Social Sciences for sustained exemplary graduate student teaching and mentoring. Graduate students wishing to nominate a faculty member should work with the Committee to compile a nominating packet that includes:

- 1. Letters of nomination from individual students and alumni
- 2. A letter of nomination from the chair of the department/committee/program
- 3. The nominee's curriculum vitae

Letters of nomination should address the specific contributions, programs, and approaches that qualify the faculty member for the award. These letters can include information and examples about advising and mentoring students, expanding student opportunities, developing and running workshops, helping students in their professional development, and contributing to the quality of the overall student experience.

GPMP Policy 16: Student Body Co-Presidents and Representatives Date: Autumn 2012 (updated Autumn 2017)

GPMP Co-Presidents

The two co-presidents provide a line of communication between faculty and students in the Committee on Medical Physics. This includes collecting opinions/feedback from the students and presenting them to the faculty. The most important role of the co-presidents is to ensure that student concerns are heard. Candidates for co-president for the following academic year will be self-nominated and elected at a late-spring meeting of the students, but their term will not begin until Autumn Quarter to allow for a smooth transition of responsibilities between successive co-presidents. Any GPMP student is eligible for nomination, but a student may only serve a single one-year term as co-president.

The co-presidents responsibilities include:

- Journal Club: Journal Club has been a longstanding tradition in the GPMP. It is entirely student-run and should be attended by all graduate students. The co-presidents organize the schedule of student presentations and run Journal Club. Each week two students each present a journal article for 15-20 minutes with time for questions; each student will make one such presentation per year.
- Fireside Chats: It is the co-presidents responsibility to schedule quarterly fireside chats with the GPMP Program Director. During these meetings students will hear updates on the state of the GPMP and voice concerns directly to the director.
- Mock Oral Exam: It is tradition for the students to hold a mock oral exam for the firstyear students in the weeks before the Comprehensive Exam. Because this occurs at the end of the academic year, it is usually handled by the newly elected co-presidents.
- Social events: Using Dean's Council funds provided to each department/committee in the Division, the co-presidents organize social events that the majority of the student body has approved.
- End-of-year meeting: The co-presidents organize voting for the Kurt Rossmann and Carl J. Vyborny Awards (see above).
- Late-spring meeting: The co-presidents organize election of the new co-presidents and Dean's council representative.
- Faculty meetings: The co-presidents attend monthly faculty meetings to raise student concerns, provide input to the faculty, and communicate information back to the students.

GPMP Representatives to the BSD Dean's Council

Two students are elected to serve as the GPMP representatives to the BSD Dean's Council. These representatives assist in the planning of the social events mentioned above. During a latespring student meeting, students can self-nominate as candidates for this position, and an election will take place. The elected Dean's Council representatives' terms will begin Autumn Quarter. There will be no term limit for this position, but a representative must be re-elected each year to continue serving. A special election will be organized by the co-presidents if a representative resigns from the position.

Student Representatives to Select GPMP Faculty Committees

Students also serve on several of the faculty committees (see GPMP Policy 21). The copresidents ensure that these positions are filled by current students. GPMP Policy 17: Student Outside Employment Date: Autumn 2013

Any student who obtains a paid employment position (or a series of such positions) that exceeds a total of 5 hours per week should discuss with their thesis advisor (or the Program Director if an advisor has not yet been selected) the nature of the position and the expected time commitment. Students should understand that their productivity as a Graduate Research Assistant in a research lab affects their own training experience and may impact the fundability of the lab's research and the progress of others in the lab as well.

GPMP Policy 18: Student Professional Society Membership Date: Winter 2014 (updated October 2017)

GPMP students are encouraged to apply for membership in the American Association of Physicists in Medicine (AAPM) or another professional society relevant to the student's GPMP work. Membership in such a society typically offers networking opportunities, career development programming for students, the ability to participate in society committees, a subscription to the society's journal, reduced meeting registration fees, and access to bulletin boards through which current hot topics are discussed. The student application fee for AAPM membership is \$25, which covers dues for the first year, and each subsequent year of student membership is \$40. The GPMP will reimburse students \$25 for their first year of AAPM student membership and \$40 for AAPM student membership each year thereafter. (These amounts may be applied toward student membership in another relevant professional society approved by the Program Director.)

The GPMP will reimburse students \$20 for annual membership in the University of Chicago chapter of the SPIE.

GPMP Policy 19: Student Vacations Date: Winter 2015

GPMP students receive an annual stipend for 12 months; therefore, all students are required to be on campus, in residence, and engaged in study or research during all four quarters (each comprised of 11 full weeks) of the academic year. Vacations are expected to coincide with breaks between academic quarters. Students should consider adhering to the following vacation schedule: the weeks between Fall Quarter and Winter Quarter, the week between Winter Quarter and Spring Quarter, the week between Spring Quarter and Summer Quarter, and one of the weeks between Summer Quarter and Fall Quarter. Students who wish to take a vacation during an academic quarter or in excess of the between-quarter periods outlined above must obtain the approval of their advisor (or the Program Director in the case of first-year students). GPMP Policy 20: Pass/Fail Grades Date: Winter 2015

The opportunity for a student to register for a course on a pass/fail basis (rather than for a letter grade) is at the discretion of the instructor. GPMP students must receive a letter grade for each of the 11 required MPHY courses. The one elective course may be taken on a pass/fail basis (at the discretion of the instructor) without further consultation with the Program. If a student wishes to take the one required statistics course on a pass/fail basis, the student must petition the Curriculum Committee, which will then decide whether that specific statistics course may be taken on a pass/fail basis by the petitioning student and by all future GPMP students (assuming that the instructor of that course in any particular quarter will allow students to enroll pass/fail).

GPMP Policy 21: Standing Committee Mission Statements and Student Representation

Date: Fall 2015

The Committee on Medical Physics has a number of standing committees, each comprised of a chair (or co-chairs) and several members appointed from among the Committee on Medical Physics faculty. Some committees also include student representation. New committees may be created at the discretion of the Chair of the Committee on Medical Physics. This policy documents the mission of each standing committee.

Admissions Committee

The admissions committee organizes the consideration of applications from prospective students for admission to the graduate program. Following the official application deadline of December 1, complete and incomplete application packages are downloaded from the University's electronic application system (Slate) and triaged by the committee. As additional data items and applications arrive in Slate, these are incorporated into the packages. The Committee assesses completeness of the applications, evaluates URM and citizenship status, and flags those applicants who seem clearly unqualified (e.g., applicants with little or no physics background). Following this triage, an application summary and rating sheet is sent to all faculty for scoring of all applications over a period of approximately two weeks. Ratings are collated by the Committee chair, and summary spreadsheets with tentative rankings are produced for use in the all-faculty admissions meeting in early January. At that meeting, final rankings are formed for use in choosing the candidates invited to Interview Weekend.

Awards and Honors Committee

The Award and Honors Committee considers both internal and external award opportunities, and informs and advises both GPMP faculty and students regarding these award opportunities. The Committee also organizes GPMP faculty working groups to evaluate award candidates and select winners for GPMP internal awards and nominate GPMP candidates to compete for external awards. For the nominated GPMP candidates who will compete for external awards, the Committee also provides assistance and advice to the nominees to prepare the required materials and applications for these external awards.

Curriculum Committee

The Curriculum Committee's primary mission is to ensure that the Graduate Program in Medical Physics and Medical Physics Certificate Program have coherent, high-quality curricula that respond to the evolving needs of the medical physics community and are in compliance with the curricular requirements of the accrediting body (CAMPEP). To achieve this mission, the Curriculum Committee systematically reviews curricula of the existing programs on an ongoing basis and makes recommendations to the faculty and the program chair regarding curricular issues, which include (but are not limited to): course requirements and sequence, course content, review of proposed courses, potential effects of proposed curricular changes, and implementation and review of curricular policies. An additional role of the Curriculum Committee is to assess and grant exemptions or waivers to individual student-initiated requests regarding coursework required for graduation. Since students constitute a primary stakeholder group affected by

December 2018

curricular decisions, the Committee includes a student member to represent the student perspective.

This committee incorporates student representation.

Diversity Committee

The mission of the Diversity Committee is to focus on recruitment and retention of a diverse student population into our graduate program, with a particular focus on URMs and women, and to provide opportunities for GPMP faculty and students to develop their understanding of diversity. To accomplish these goals, the Diversity Committee is comprised of faculty and student representatives who will liaise with the BSD Graduate Minority Committee as well as with the GPMP Admissions committee. The Diversity Committee will serve as an educational resource, will lead diversity/inclusion initiatives, and will increase outreach to medical physics candidates in the pipeline for graduate school.

This committee incorporates student representation.

Electronic Presence Committee

The Electronic Presence Committee ensures good presentation of the GPMP on the Internet to the medical physics community, prospective students (and their teachers), and maintains intranet resources to facilitate GPMP internal communications and recordkeeping. The committee responds to evolving needs of the GPMP, and it requests content and welcomes suggestions from faculty, students, and administrators.

This committee incorporates student representation.

Internship Committee

The mission of the Internship Committee is to develop policies for managing and supporting student internships both on and off campus. The goal is to balance the benefits of internships with the need to manage potential conflicts of interest, time-to-degree considerations, and adherence to University, Divisional, and Committee on Medical Physics policies. The Internship Committee will review specific proposed internships in the context of these policies.

This committee incorporates student representation.

Publicity/Recruitment Committee

The Publicity/Recruitment Committee seeks to attract the strongest possible applicants to the Committee on Medical Physics and seeks to encourage those admitted to matriculate. It attracts applicants through targeted presentations at local universities and appropriate national meetings. It works closely with the Electronic Presence Committee to ensure that the website and social media presence support these efforts. The Committee also organizes the Interview Weekend during Winter Quarter.

This committee incorporates student representation.

Research Colloquium Committee

The mission of the Research Colloquium Committee is to provide a platform for exchange and discussion, particularly for junior researchers within the Departments of Radiology and Radiation & Cellular Oncology and across the University. The Committee organizes the colloquium series, with approximately nine lectures during the Fall, Winter, and Spring Quarters. Potential speakers include senior GPMP graduate students, postdocs, visiting faculty and research associates, and clinical medical physics residents with the goal of accommodating all speakers who wish to present.

This committee incorporates student representation.

Seminar Committee

The Seminar Committee oversees the selection of distinguished speakers who are medical imaging or therapy experts or visionary individuals with research relevant to medical imaging or therapy. The speakers are nominated by the Committee on Medical Physics faculty and selected by the Committee, which is composed of two imaging and two therapy faculty members. The seminar series is meant to provide a medium for new research ideas to be presented and discussed among the faculty and students as well as an opportunity for mutual exchange of ideas between the visiting professor and Medical Physics faculty and students. Every year the Committee chair calls for nominations of potential speakers. Faculty nominate speakers from outside institutions based on their expertise, recognition, and research interests. Students could suggest potential speakers, but a faculty member must host any invited speaker. The Committee makes the final selection decisions, with an equal number of speakers in the imaging and therapy fields. An invitation from the Committee chairs is sent out to each selected speaker. Seminars are organized for the academic year.

GPMP Policy 22: Student Funding Acknowledgment

Date: Fall 2015

All manuscripts co-authored by students must acknowledge the source(s) of student support along with support for any shared resources used in the conduct of the reported study. Students should always be aware of their current funding source and all prior sources of funding, which may change from year to year. Template acknowledgment language for the most common funding sources relevant to GPMP students is given below.

T32 Training Grant

"Supported, in part, by the National Institute of Biomedical Imaging and Bioengineering of the National Institutes of Health under grant number T32 EB002103." This same language may be used to acknowledge any research grant by including the appropriate funding agency and grant number.

<u>R25</u>

"Research reported in this publication was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number R25GM109439 (Project Title: University of Chicago Initiative for Maximizing Student Development (IMSD))."

UCCCC support for GPMP students

"Supported, in part, by The Coleman Endowment through The University of Chicago Comprehensive Cancer Center."

UCCCC projects or resources

Cite Cancer Center Support Grant (CCSG) P30 CA014599 on all publications that made use of Cancer Center resources and/or funding (both direct and indirect). These resources include:

- 1. Protocol-specific funds
- 2. Pilot project funds
- 3. Research that used any UCCCC-supported core facilities:
 - Bioinformatics
 - Biostatistics
 - Cancer Clinical Trials Office (CCTO)
 - Cytometry and Antibody Technology (CAT)
 - Epidemiology and Research Recruitment (ERRC)
 - Genomics
 - Human Imaging Research Office (HIRO) (template language may be found at https://hiro.bsd.uchicago.edu/acknowledgments)
 - Human Immunologic Monitoring and cGMP
 - Human Tissue Resource Center (HTRC)
 - Image Computing, Analysis and Repository (ICAR)
 - Integrated Microscopy
 - Integrated Small Animal Imaging Research Resource (iSIARR)
 - Pharmacology
 - Transgenic Mouse and Embryonic Stem Cell Facility

GPMP Policy 23: Online Courses Date: Spring 2016

A non-University of Chicago online course could be taken by a student in fulfillment of the required GPMP elective. The Program, however, will not pay tuition or associated fees for any online course. A three-step process has been defined: (1) the student's advisor must approve the topic of the course, (2) the Curriculum Committee must approve the reputation and rigor of the course, and (3) the Program Director must confirm course completion and submit a grade to the Registrar. A student may take any number of online courses above and beyond the required GPMP elective course (in consultation with the advisor, but without the involvement of the Curriculum Committee or Program Director), but these courses will not become part of the student's University of Chicago transcript.

GPMP Policy 24: Student Dissertations Date: Spring 2017

The Program will pay the standard copyright fee and will pay for binding three copies of a student's dissertation (one for the Program, one for the thesis advisor, and one for the student); if a student has co-advisors, the Program will pay for a fourth bound copy. The alumni page through the Committee on Medical Physics website will link to the ProQuest hosting site for each graduate's dissertation.

Policy Handbook changes

GPMP Policy 1:	Course Requirements for the Ph.D. Degree (waiver policy updated 10/15/13)
GPMP Policy 2:	Courses and Requirements for the M.S. Degree (changes made for consistency with new Ph.D. requirements 11/20/13)
GPMP Policy 2, 8, 9:	Update to reflect the "two weeks plus two days" timing for student and advisor communication with the Program Director, Graduate Education Administrator, and faculty regarding Proposal Hearings, Dissertation Defense Hearings, and M.S. Final Examinations (modified 3/22/14)
GPMP Policy 5:	Guidelines for Research Rotations for First-Year Students (change from 4 to 2 required first-year research rotations and describe the new research course numbering scheme October 2013) (modified December 2018 to change report due date to the beginning of the following quarter)
GPMP Policy 7:	Update to specify schedule of the required semiannual Dissertation Advisory Committee meetings (modified 4/22/16) (modified December 2018 to recommend that the Dissertation Advisory Committee be assembled by the 6 th rather than the 8 th Quarter) (modified February 2020 to formalize the dissertation advisory committee chair as distinct from the thesis advisor)
GPMP Policy 8:	Update dissertation research proposal format specification (modified $3/16/16$) (modified December 2018 to change expected proposal passage milestone from 12^{th} Quarter to 10^{th} Quarter)
GPMP Policy 13:	Student Travel Aid (information re BSD travel awards added 11/20/13) (modified 9/16/15 to reflect that travel after the end of the fiscal year in which a student graduates is not eligible for reimbursement) (modified September 2017 (1) to clarify that a presentation by the student is not required to be eligible for the reimbursement, (2) to <u>allow</u> travel reimbursement under certain conditions after graduation, and (3) to allow the reimbursement for first-year students to attend the July AAPM meeting (which is in the next fiscal year)) (modified July 2018 to increase annual allocation to \$750 per student)
GPMP Policy 14	Students who hold their proposal hearing beyond their 12th quarter will not be eligible for the Lanzl Award (modified 4/20/16; meant to apply beginning with students whose 12th quarter is Summer 2017) (modified September 2018 to reconcile the description of the selection process with actual practice)
GPMP Policy 15:	Updated to align description of Rossmann Award selection process with practice (modified 10/18/17)

Committee on Medical Physics		raduate Program Policies	December 2018	Page 34 of 34
GPMP Policy 16:	Updated to m process for co 10/18/17)	nodify co-president eligibility o-presidents and Dean's Cou	y requirement and the incil representatives	e election (modified
GPMP Policy 17:	Student Outs	ide Employment (new policy	y added 11/20/13)	
GPMP Policy 18:	Student Professional Society Membership (new policy added 3/19/14) (modified October 2017 to include reimbursement for student membership in the University of Chicago chapter of SPIE)			
GPMP Policy 19:	Student Vaca requirement advance of va	ations (new policy added 3/2. that students inform the Grac acations (modified 4/19/17))	5/15) (modified to re duate Education Adm	emove ninistrator in
GPMP Policy 20:	Pass/Fail Gra	ndes (new policy added 3/25/	(15)	
GPMP Policy 21:	Standing Con policy added	nmittee Mission Statements 9/16/15)	and Student Represe	entation (new
GPMP Policy 22:	Student Fund	ling Acknowledgment (new	policy added 12/9/15	5)
GPMP Policy 23:	Online Cours	ses (new policy added 4/20/1	6)	
GPMP Policy 24:	Student Diss	ertations (new policy added :	5/17/17)	