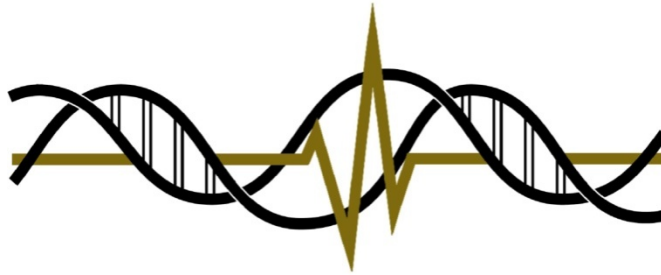


**Department of Medical Physics**

**University of Wisconsin  
Madison**

# **Student Handbook**



**For students entering the program in 2023 or later**

Date of Revision: August 2023

Department of Medical Physics  
University of Wisconsin  
1111 Highland Avenue  
1005 Wisconsin Institutes for Medical Research  
Madison, WI 53705-2275

# Policy

In conformance with applicable federal and state regulations, UW-Madison does not discriminate on the basis of race, sex, handicap, religion, age, national origin, or veteran's status with regard to treatment of students in the educational programs or activities, which it operates. Inquiries concerning this policy may be directed to appropriate campus admitting or employing units or to the Office of Affirmative Action Planning and Programming, Division of Diversity, Equity & Educational Achievement, 109 Bascom Hall 500 Lincoln Drive

[UW-Madison Equal Employment Opportunity and Affirmative Action \(EEO/AA\) Policy Statement](#)  
[Office of the Registrar Equal Opportunity Affirmative Action Statement](#)

## Professional Conduct and Ethical Behavior Statement

All UW School of Medicine and Public Health faculty, staff and students are responsible for upholding the highest standards for professional conduct and ethical behavior in pursuing the School's missions of patient care, education, research, and service. Professionalism includes: 1) demonstrating honesty, integrity, inclusivity, accountability, and fairness; 2) treating everyone, including patients and visitors, colleagues, staff, and learners, with kindness, compassion, and respect; and 3) making a commitment to altruism in all interactions. Faculty, staff and students are responsible for personally modeling professional conduct as described in the School's Shared Guidelines for Professional Conduct (available [here](#)) and inspiring and expecting professional behavior by others. The School of Medicine and Public Health expects all faculty, staff and students to abide by these principles of professionalism, and associated laws and university policies, in the performance of their responsibilities.

## Medical Physics Administrative Directory

**Department Office: 608-265-6116 (phone), 608-262-2413 (fax)**

Brian Pogue, Chairperson / Program Director.....	262-2171
Kristina Weaver, Administrator.....	262-2170
Caz Briggs, Assistant to the Chair .....	262-2171
Ron Wakai, Admissions Committee Chair.....	265-4988
Tomy Varghese, Graduate Committee Co-Chair.....	265-8797
Wesley Culberson, Graduate Committee Co-Chair, Grievance Advisor .....	265-5084
Bryan Bednarz/Brian Pogue, T32 Training Grant PI.....	265-9459
Taylor Hartung, Educational Programs Coordinator.....	265-6504
Mary Pierce, Research Administrator.....	262-8795
Clint Colby, Financial Specialist.....	265-4041

Alyssa Mohr, Post-award Financial Manager.....	262-2171
Mary Pierce, Administrative Support / Office Operations.....	265-6116
Anthony Hang, Financial Specialist II .....	265-4041
Charles Reinke, Database and Web Programmer .....	263-5924
Dennis Commerford, Information Technology Support .....	262-7826
Keith Kunugi, Administrative Director MRRC / ADCL.....	265-3858
Gabby Fisk, Human Resources Business Partner .....	262-9424
Catherine Showers, Communications Specialist .....	TBD

Department of Medical Physics  
 1111 Highland Avenue  
 1005 Wisconsin Institutes for Medical Research  
 Madison, WI 53705-2275

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### **Help Us Improve This Handbook**

As you use this handbook, please think about what's useful, what's not, and what we've forgotten to include. Please take a minute to tell us what you would like to see in it in the future. The handbook is intended to answer most of your questions about the Department of Medical Physics, but to make that work we need your input. Comments and suggestions should be given to the Educational Programs Coordinator, Carol Aspinwall, [caaspinwall@wisc.edu](mailto:caaspinwall@wisc.edu).

# Information about the Department of Medical Physics

## ***The Department Of Medical Physics***

Medical Physics is a branch of applied physics. It uses concepts and methods of physics to help diagnose and treat human disease but has become very specialized as a discipline. The UW Medical Physics Department offers graduate training and education in radiological physics and dosimetry and in functional, anatomical, and interventional medical imaging. New procedures, including ablation therapy, molecular imaging, optical imaging, photoacoustic imaging, and biomagnetism are also included in the curriculum and research.

The Department of Medical Physics is one of 10 Basic Science Departments and 17 Clinical Departments in the UW School of Medicine and Public Health (SMPH). Graduate work in this department prepares students for professional positions in teaching, research or service in medical centers, national laboratories, universities, governmental regulatory agencies, and in the medical and nuclear technology industries. Financial support for the department comes from the SMPH, research grants and contracts, and revenue-producing operations. The base budget for SMPH support follows a process known as Mission Aligned Management and Allocation, or MAMA. The SMPH supports medical physics in its mission of teaching, research, and service, with formula budget lines related to faculty contributions in each of these areas.

The Department of Medical Physics maintains close collaborative ties with other UW SMPH departments, including Human Oncology (Radiation Therapy), Medicine, Neurology, Neurological Surgery, Radiology, and Psychiatry, as well as departments in other schools and colleges, including Physics, Biomedical Engineering, and Nuclear Engineering / Engineering Physics. The department also has close ties with the School of Veterinary Medicine, the National Primate Research Center, and the Morgridge Institute for Research. Many faculty members hold joint appointments, principally in Radiology, Biomedical Engineering, and/or Human Oncology. These cross-links broaden the scope of the research opportunities open to graduate students and provide access to additional equipment and facilities, such as linear accelerators, magnetic resonance imaging (MRI) equipment, X-ray computed tomography (CT) scanners, ultrasound scanners, optical imaging equipment, and positron emission tomography (PET) scanners.

The Medical Physics Department has access to many unique imaging research facilities in its location in the Wisconsin Institutes for Medical Research (WIMR), adjacent to UW Hospital and Clinics (UWHC) and to the SMPH Health Sciences Learning Center (HSLC). State of the art MRI scanners, CT scanners, ultrasound scanners, angiography systems, and a biomagnetism suite are located on the first floor of WIMR I and are shared with Radiology for carrying out imaging research. A PET-Trace cyclotron facility, radiochemistry labs with automated synthesis modules, GMP Radiopharmaceutical Production Facility, two PET/CT systems, a PET/MR system, a machine shop, and the Medical Radiation Research Center (MRRC) and Accredited Dosimetry Calibration Lab (ADCL), with a Varian TrueBeam linac dedicated to research and education, are located one floor down. Also, in the WIMR I basement is the Small Animal Imaging Lab, with optical, SPECT/CT, PET, MRI, and ultrasound/photoacoustic imaging systems. Graduate students engaged in research in any of these modalities often are trained to use these facilities.

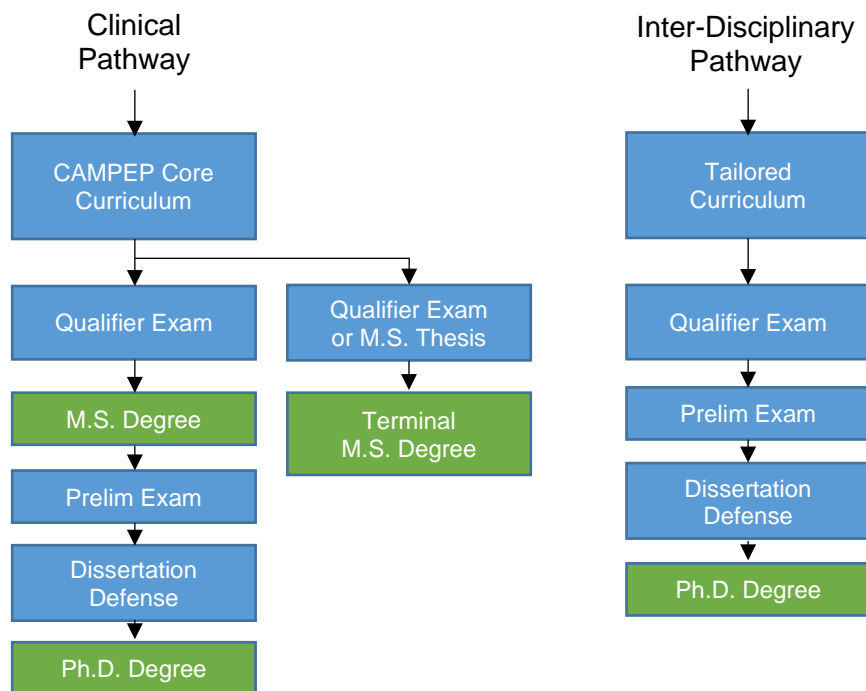
The Department's ADCL is one of three in the U.S. accredited by the American Association of Physicists in Medicine. In addition, the Department serves UW Hospitals and nearby medical centers by providing Diagnostic Imaging Equipment Quality Assurance programs. Finally, many unique opportunities for Medical Physics trainees are provided by faculty in the adjacent Radiation Oncology Department (Department of Human Oncology Physics Section). The Radiation Therapy Department of the Hospital is an ACR (American College of Radiology) accredited clinical department offering state of the art

radiation therapy modalities including TomoTherapy, SBRT, SRS, MRI-guided RT and advanced LDR and HDR brachytherapy. \_\_\_\_\_

**Degrees Offered**

The Department of Medical Physics offers programs of study leading to Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Medical Physics. The program is structured so the student may emphasize the conventional areas of radiation therapy physics and metrology, image science, or health physics, or may develop a plan of study outside of these areas of concentration. The ‘Clinical Pathway’ offers coursework in conventional areas of medical physics, and the M.S. and Ph.D. degrees are accredited by the Commission on Accreditation of Medical Physics Education Programs (CAMPEP). The ‘Inter-Disciplinary Pathway’ offers a Ph.D. degree that can be tailored to a non-traditional area of concentration and is not CAMPEP accredited.

**Pathways to M.S. and Ph.D. degrees**



Flowchart Students on the Clinical Pathway take the CAMPEP Core Curriculum (see details below). This path is typical for students who seek a career including clinical medical physics and who plan to enter a medical physics residency program after graduation. Students on the Inter-Disciplinary Pathway can replace some core curriculum courses with alternate courses to achieve a tailored learning experience. This path should be considered by students who are interested in primarily research or industry (but not clinical) careers, and/or students who work in a non-traditional field of medical physics.

**Clinical Pathway**

Students on the Clinical Pathway take the ‘CAMPEP Core Curriculum’, a didactic training program covering topics needed for a career in Clinical Medical Physics, including radiological physics & dosimetry, radiation protection & safety, fundamentals of medical imaging, radiobiology, anatomy & physiology, radiation therapy physics, and professionalism & ethics. Students should select the Clinical Pathway if they plan to enter a CAMPEP-accredited residency program and train to become a board-certified clinical medical physicist following graduate school. For additional information, see the section ‘Clinical Physics Positions: ABR Board Certification’.



### **Inter-Disciplinary Pathway**

PhD students pursuing a primarily research-based or industry career (i.e. non-clinical medical physics) are encouraged to enter the Inter-Disciplinary pathway. This pathway gives the student and their advisor the freedom to replace some of the Core Curriculum courses with alternate courses that are specifically aligned with the student's research interests, including courses offered outside the Medical Physics Department. This pathway is well suited to students who wish to focus on a specific modality, or emerging discoveries and inventions in medical physics, biomedical engineering, and biophysics. This pathway does not provide CAMPEP accreditation for clinical physics residency placement. For additional information on planning the Inter-Disciplinary Pathway, see 'Planning a Pathway'.

### **Comparison of Minimum Credit Requirements**

	<b>MS Clinical/Research Pathway</b>	<b>Clinical Pathway PhD</b>	<b>Inter-Disciplinary Pathway PhD</b>
<b>Total credits – courses + lab + research + journal club</b>	40 (students in the Inter-Disciplinary pathway are not eligible for an MS degree)	54	54
<b>Total course credits</b>	35	42	42
<b>Core MP course credits</b>	33	33	At least 24 from MP (Core or Advanced), including 1 <sup>st</sup> semester Core MP courses
<b>Advanced (600+ level) MP course credits</b>	2-3	9	
<b>Other requirements and comments</b>	None	3 advanced credits may be outside MP	All credits beyond the 24 from MP must be graduate level courses (500+)
<b>Core MP lab credits</b>	1	1	0
<b>Research credits</b>	0-8	7	8
<b>Journal Club / Seminar credits</b>	4	4	4

The M.S. degree requires a minimum total of 40 credits. This consists of 34 credits of Core Curriculum (33 credits of lecture courses + 1 credit lab), at least 2 credits of Advanced courses taken within Medical Physics, and 4 credits of Journal Club. Courses numbered 600 or higher in the Dept. of Medical Physics are considered Advanced courses.

Ph.D. students on the Clinical Pathway complete all M.S. degree requirements and supplement with additional coursework for a total of 54 credits. These students are required to take 9 credits of Advanced courses, but up to 3 of these Advanced credits may be taken outside of Medical Physics. The remaining

7 credits (out of 54) can be taken as research credits, or as a mix of research credits and elective courses numbered 300 or higher. Not including labs, research credit, independent study, Journal Club, or elective courses, there are 33 required Core Curriculum course credits + 9 required Advanced course credits = 42 required credits of coursework.

Ph.D. students on the Inter-Disciplinary Pathway are also required to complete 54 credits total and 42 credits of coursework, but there is greater flexibility in course selection. These students must take at least 24 credits from Medical Physics courses (either as the home program or cross-listed). The 24 credits should include the 1<sup>st</sup> semester Core Curriculum courses (MP501, MP573, MP510, MP701) and cannot include research credits, independent study, or Journal Club. Beyond this, the total 42 credits of coursework may be satisfied through any graduate-level courses from any department, provided they are numbered 500, or higher and Department approval has been obtained (see the section 'Planning a Pathway'). The remaining 12 credits (out of 54) are satisfied through 4 credits of Journal Club and 8 credits which may be taken as research credits, or a mix of research credit and elective courses numbered 300 or higher.

### **CAMPEP Core Curriculum**

		Semester
MP 501	Radiation Physics and Dosimetry -- (3 cr.)	Fall
MP 510	Fundamentals of Cellular, Molecular, and Radiation Biology -- (3 cr.)	Fall
MP 566	Physics of Radiotherapy -- (3 cr.)	Spring
MP 569	Health Physics and Biological Effects -- (3 cr.)	Fall
MP 573	Medical Image Science: Mathematical and Conceptual Basis -- (3 cr.)	Fall
MP 574	Data Science in Medical Physics -- (3 cr.)	Spring
MP 578	Non-Ionizing Diagnostic Imaging -- (4 cr.)	Spring
MP 580	Physics of Medical Imaging with Ionizing Radiation -- (4 cr.)	Spring
MP 588	Radiation Production and Detection -- (4 cr.)	Spring
*MP 671	(Special Topics) Anatomy/Physiology -- (2 cr.)	
MP 701	Ethics, Responsible Conduct of Research and Practice of Medical Physics -- (1 cr.)	Fall
MP 581	Laboratory for Medical Imaging with Ionizing Radiation-- (1 cr.)	Fall

\*May also be satisfied by Human Anatomy 337 or Physiology 335.

This Core Curriculum, satisfies the Commission on Accreditation of Medical Physics Education Programs, Inc. ([CAMPEP](#)) core course requirements as defined in the [Standards for Accreditation of Graduate Educational Programs in Medical Physics](#). Ph.D. students on the Clinical Pathway must complete these courses prior to advancing to dissertator status.

### **Advanced Courses in Medical Physics**

MP 619	Microscopy of Life -- (3 cr.)
MP 651	Methods for Neuroimaging Research -- (3 cr.)
MP 679	Radiation Physics Metrology -- (3 cr.)
MP 705	Women and Leadership: Science, Health and Engineering -- (2 cr.)
MP 710	Advances in Magnetic Resonance -- (3 cr.)
MP 750	Biological Optical Microscopy -- (3 cr.)
MP 770	Advanced Brachytherapy Physics -- (3 cr.)
MP 772	Advanced Radiation Treatment Planning -- (3 cr.)
MP 777	Principles of X-ray Computed Tomography -- (3 cr.)
MP 778	Machine Learning in Ultrasound Imaging -- (3 cr.)
MP 780	Pharmacokinetic Modeling in Biomedical Imaging -- (2 cr.)

Courses numbered 600 or higher in the Dept. of Medical Physics are considered Advanced courses. In

addition to the courses listed above, students may also take 1-credit Rad Labs (MP662, MP663, MP664, MP665, MP666) to complete a portion of the advanced course requirement.

### ***Choosing a Degree***

The majority of graduate students in the UW-Madison Department of Medical Physics complete a Ph.D. degree. The Ph.D. is primarily a research degree that focuses on a specialty area. Faculty positions at universities, research positions, positions in industry, and many clinical physics positions require a Ph.D. degree.

Ph.D. students on the Clinical Pathway will earn a Clinical/Research M.S. degree after passing their Ph.D. Qualifier Exam and completing required coursework. It is also possible to obtain a terminal M.S. degree on the Clinical Pathway after completing coursework and either passing the Qualifier Exam or completing a Master's Thesis. However, a terminal M.S. may not be an optimal degree for a career as a clinical medical physicist. Currently available data demonstrate that Medical Physics Residency Program opportunities are more challenging to obtain with an M.S. degree versus a Ph.D. degree.

### ***Planning a Pathway***

Pathway choice depends on career goals. Historically, half of UW-Madison Medical Physics graduates have taken a clinical career path, while the other half have gone into academics, research, industry or public policy, in non-clinical pathways. All Medical Physics graduate students take the same set of foundational courses in their first semester. Starting in the 2<sup>nd</sup> semester, there is greater flexibility in course selection. For this reason, students should discuss pathway with their advisor as early as possible, and ideally decide before selecting their 2<sup>nd</sup> semester courses.

Students choosing the Clinical Pathway must ensure that they take all courses in the CAMPEP Core Curriculum and meet all other requirements for their degree. Note there is some flexibility in the sequencing of core courses. It is up to the student and advisor to plan their courses accordingly to be sure they have satisfied all requirements.

Students choosing the Inter-Disciplinary Pathway should prepare a course plan with their advisor. The student and advisor must provide the Medical Physics Graduate Committee a written explanation describing the reasoning behind the course selections. The student will receive a written communication, to which the student must agree in writing, stating the student will not satisfy or be eligible to receive a CAMPEP completion attestation unless the core course(s) replaced by alternate course(s) are ultimately taken.

### ***Clinical Physics Positions: ABR Board Certification***

For those interested in careers in clinical Medical Physics, it is important to note that many clinical medical physics positions require certification by a certification board, the most common being the American Board of Radiology (ABR). Please be aware of eligibility requirements for ABR board certification exams. The exam is given in three parts:

Part 1 tests basic radiological physics and clinical aspects of radiological physics, including physiology and anatomy. Prerequisites include appropriate undergraduate physics education (at least three upper level physics courses required of a physics major, or equivalent) and an advanced degree in physics or medical physics. Candidates enrolled in a CAMPEP-accredited medical physics graduate program, such as here at UW-Madison, are eligible to take Part 1 during their graduate training. Note that applications for the Part 1 exam are due almost one year before the exam takes place, which means that a student may apply for the exam without having completed their Medical Physics degree yet.

Part 2 has a choice of three separate tests: a) Diagnostic Medical Physics; b) Nuclear Medical Physics; and c) Therapeutic Medical Physics. Besides didactic training, eligibility for Part 2 includes clinical training, which, starting with individuals taking Part 1 in 2014 and later, must be accomplished in a CAMPEP approved residency program.

Part 3 is an oral examination designed to test knowledge and fitness to practice Medical Physics in one or more of the specialty areas of Diagnostic Medical Physics, Nuclear Medical Physics and Therapeutic Medical Physics. The candidate is examined by five physics examiners, each of whom asks questions in five categories related to the specialty area(s). Detailed and the most up to date information on the ABR's Medical Physics Certification examination process can be obtained on its [website](#).

### ***Prerequisite Course Deficiency During Admission to Medical Physics***

We require the equivalent of a minor in Physics for admission to the program. Modern Physics is a specific course requirement. Applicants who are admitted to the program without meeting this requirement are instructed to register and take the missing physics course(s) for credit as soon as available to meet the pre-requisite for admission to the Medical Physics program. The course(s) should be completed by the end of the first year. The Graduate Committee Chair monitors this along with the student's advisor through e-mail and verification on the student's transcript by the Educational Programs Coordinator. Students who do not meet this requirement are not eligible to take the qualifying examination or receive any degrees in Medical Physics.

### ***Advanced Degree Policies for the Clinical Ph.D Pathway***

Students who entered the Medical Physics Program with an advanced degree (Ph.D.) in a field other than medical or radiological physics must take our core curriculum courses unless equivalent coursework has been completed elsewhere. Students must also pass the Medical Physics Oral Ph.D. Qualifying Exam to pursue a doctoral degree. If a student has already received a master's degree in medical or radiological physics elsewhere, it may be possible to enter our program with intent to begin immediately working toward the Ph.D. In this case the student would take those M.S. required courses which were inadequately covered in their previous course of study as deemed by the Graduate Committee and course instructors. A student may be excused from taking any required course if, in the judgment of the course instructor(s) and the Graduate Committee, an equivalent course has been successfully completed elsewhere. However, the credit requirements for the Ph.D. have to be met over the course of study.

### ***Transfer Credits for Prior Coursework***

[Policies for transferring credits](#) from other departments and institutions are set by the Graduate School <https://policy.wisc.edu/library/UW-1216>. Transferred courses will now appear on the student transcript. According to this policy, transfer credits may be used to fulfil degree required coursework. However these transfer credits will not count towards the graduate career GPA, nor will they count towards the minimum *residence graduate requirement* unless they were taken at UW Madison. The Graduate School's minimum graduate *residence credit requirement* (policy [here](#)) can be satisfied only with courses taken as a graduate student at UW–Madison. The Department of Medical Physics *residence credit requirement* is more stringent than the University requirement with 37 credits for the MS students and 42 credits for the Doctoral degrees. Transferred courses must all be 300 and above level. The following two sections provide more detail on the transfer credits.

Previous Courses Taken at UW Madison as an Undergraduate: For the M.S. Degree in Medical Physics, residence credit requirements may be reduced by a maximum of 7 credits for excess (above and beyond undergraduate graduation requirements) graduate coursework in Medical Physics taken by a student during their undergraduate education at UW-Madison. With the approval of the Advisor, a student with a minimum grade of B in the Medical Physics graduate level coursework can apply for this residence credit reduction.

Previous Graduate Courses Taken at Other Institutions: For each such course, the student, after obtaining advisor approval, must establish that the graduate course taken previously is equivalent to a similar course taught at UW-Madison. A minimum grade of B is required for the prior graduate level course. A letter from the UW-Madison instructor of the course, confirming equivalency or the need for any specific action(s) before equivalency is granted, is required. There will be no reduction of the residence credit requirements with transfer credits from outside institutions.

PhD Student Example: If an incoming student has completed graduate-level coursework from another institution (such as a Medical Physics program somewhere else), the student would be able to transfer up to 12 credits that would count towards the Medical Physics 54 total credit requirement for a PhD. This is due to the Medical Physics program minimum residence credit requirement being 42 for PhD students.

Previous Undergraduate Courses Taken at Other Institutions: Transfer of credits from an undergraduate career outside of UW-Madison is not allowed. Note: A “waiver” may be granted for the CAMPEP anatomy/physiology requirement.

## Appointments and Personal Assistance

### ***Financial Assistance***

Our department has a history of generous and long-term support for our students. Financial assistance is available in the form of fellowships, research assistantships, project assistantships, traineeships, and teaching assistantships. Funding is communicated at the time of acceptance into the program. Incoming students may receive financial support as research or project assistants, or on specific Graduate School or other program fellowships. Research Assistant (RA) and Project Assistant (PA) positions are filled on the basis of competence, relevant experience, and faculty funding availability. Fellowships are often given to students who are nominated by the department because of the student's specific needs, skills or other qualifications. Financial support can then vary throughout the student's program based on progress and additional department grants. In no case, however, should a student assume that such support will be unlimited. Availability of funds and satisfactory progress determine on-going support.

A limited number of partial Teaching Assistant (TA) positions are available in the department. These usually are awarded to advanced students who have taken the courses for which TAs are hired. If a student is interested in a TA position they should discuss this with the specific course instructors. Not all courses qualify to have a TA. Determination of eligibility for the class to have a TA is made by the Department Chair. If approved, TA training and other requirements are communicated by the Educational Programs Coordinator.

The Medical Physics Department administers the NIH NRSA UW Radiological Sciences Training Grant (T32). This grant is sponsored by the [National Cancer Institute](#) so an interest in cancer research is required. Students may be [nominated](#) by their advisors for one of the 7 pre-doctoral positions on this grant whenever there is an opening. Trainees are funded for a minimum of two years with a stipend, travel funds, tuition coverage and health insurance benefits. These positions are most often filled by students who are near or have attained dissertator status. If a student is interested in being considered for this traineeship, they should speak to their advisor and put together a nomination packet.

Other training grant opportunities are also available. Some of these are directed towards entering students (the Neurosciences Training Grant) or towards returning students (the Biotechnology Training Program (BTP) Grant) and are administered by other basic science departments.

### ***Enrollment Requirements as an RA/PA/TA, Fellow or Trainee***

Students who are pre-dissertators in the Medical Physics Department and hold a research assistantship, fellowship or trainee position must maintain full-time enrollment status (at least 8 credits during regular semesters) and 2 credits during the summer. PA's and TA's must register for at least 2 or more credits in the fall and spring semesters; summer registration is not necessary for PA's and TA's. In most cases, to be eligible for financial support, a student must be making satisfactory progress as defined by the department and the Graduate School. Several minimum enrollment conditions apply in order to maintain Visa status, loan deferment and other obligations. More information is available at: <https://grad.wisc.edu/academic-policies/>. Students who have achieved dissertator status, regardless of RA, TA, fellowship or trainee status, must register for 3 credits at all times, with at least 1 credit being research (MP990).

### **Lab Rotations**

Lab rotations provide the opportunity for newly admitted students to better evaluate the labs and working environment associated with a potential mentor. It also allows faculty to better evaluate students being considered for their research teams. These are generally one-semester opportunities available to students who have funding and have not (as of the start of the semester) become aligned with a research group. It is in the student's best interest to secure an RA position with a faculty member as soon as possible, even while completing their rotations.

The length of each rotation is usually around 6 weeks. Students are required to provide a brief summary of rotation activities at the end of each rotation. It is the new student's responsibility to identify labs in which they are interested and connect with the faculty to set-up these rotations. The graduate committee chairs and Educational Programs Coordinator can assist with this. Once the student has contacted the faculty or received names of faculty interested in offering a rotation and confirm that the faculty wish to have them rotate through their labs, then the names are submitted to the Graduate Program Committee chair(s).

The Graduate Program Committee Chairs will serve as the formal advisors during the rotations. Their role will be to sign off any academic forms on the student's behalf if needed, the IDP (unless an assigned advisor match is made and then they complete this in the spring term with the student). They are responsible to see that the rotation is providing a valuable learning opportunity for the students and should have regular contact to ensure this is happening. Compacts are signed after the student has identified a research advisor.

Rotations usually are for a single semester and are funded by the department, not an individual faculty member. It is important for the student to try and identify a lab to join as soon as possible. The student should try and identify this lab by the end of the semester, so that a more permanent arrangement can be organized before the next semester begins. Additional rotating semesters needs approval from the department chair.

### **Students with Disabilities**

Support services can be found at the McBurney Disability Resource Center, which is located at 702 West Johnson Street, Suite 2104. The phone number is (608) 263-2741 and the TTY number is (608) 263-6393. Their e-mail address is [mcburney@odos.wisc.edu](mailto:mcburney@odos.wisc.edu) and their web site can be found at <http://www.mcburney.wisc.edu>.

### **Personal Safety, Harassment, Discrimination, and Diversity/Inclusion**

While there are many resources and activities designed to help you stay healthy and safe, three in particular are SAFEwalk (evening walking escorts), University Health Services (UHS), and the University Police.

Sexual harassment and sexual assault are important issues and are not tolerated in the UW-Madison community. UW-Madison offers a place to go if you believe that you are a [victim of sexual assault](#). The Office for Equity and Diversity provides extensive online documentation and contact information, including webpages on *Sexual Harassment Information*, *Safety and Sexual Assault*, and an online *Sexual Assault Reporting Form*. One may also contact the Office for Equity and Diversity at (608) 263-5562. The Office for Equity and Diversity website is also an important resource for information on discrimination.

Finally, the Dean of Students Office website is an excellent source of information with a convenient single web access point for multicultural student services, LGBT resources and information. The website also addresses issues related to personal safety, harassment, hostile and intimidating behaviors,

discrimination, diversity/inclusion, hate and bias issues and provides links to reporting any such events (reporting of any such events (<https://grad.wisc.edu/current-students/#reporting-incidents>)).

***Campus Police***

The phone number for campus police is 608-264-2677. Of course, if there is an emergency dial 911.



## First-Semester Student Survival Checklist

### Summer:

- \_\_\_\_\_ Register for Courses (*You **MUST** be registered to get the WisCard ID card and get the bus pass*)
- \_\_\_\_\_ Connect with incoming students and your faculty advisor/research team
- \_\_\_\_\_ (If applicable) Submit Final Official Undergraduate or M.S. Transcripts to the Graduate School Admissions Office as soon as your final degree is posted. *Failure to do so will result in a hold placed on future registration*
- \_\_\_\_\_ If you have a need related to a disability, contact the [McBurney Center](#) before you arrive on campus for program access services, information and referrals.

### First Few Days on-campus:

- \_\_\_\_\_ Meet with your advisor and research team
- \_\_\_\_\_ Check in with Medical Physics Departmental Office, WIMR I room 1005. Meet with office administrator (*for your cubicle assignment, keys, after hours entry*)
- \_\_\_\_\_ International Students – check in with International Students and Scholars Services and attend required meetings Visit their web site at: <http://www.iss.wisc.edu/>
- \_\_\_\_\_ Find your mail box in the Medical Physics Department
- \_\_\_\_\_ Change/Verify your mailing address in your **My UW** (<https://www.wisc.edu/>)
- \_\_\_\_\_ \*Get your Bus Pass and WisCard (Student ID card) at Union South (*remember to bring identification*) <http://wiscard.wisc.edu/>
- \_\_\_\_\_ Attend Department Orientation Activities
- \_\_\_\_\_ Meet with the HR Administrative Support Staff as needed after Orientation to complete any necessary paperwork (*Insurance forms, Direct Deposit form*)
- \_\_\_\_\_ Attend *New Graduate Student Welcome Events* sponsored by the Graduate School
- \_\_\_\_\_ Complete Mandatory HIPAA Training

### First weeks of the Semester:

- \_\_\_\_\_ Meet with your advisor to review/sign the Graduate Student Compact
- \_\_\_\_\_ Complete your [Individual Development Plan \(IDP\)](#) as soon as it is requested electronically.
- \_\_\_\_\_ Take Radiation Dosimetry Training. (**Check with your advisor to see if you are required to get a badge.**)
- \_\_\_\_\_ Pay your tuition and/or segregated fees at the [Bursar's Office](#) (*watch deadlines*)
- \_\_\_\_\_ Add your coursework in the Education Portal > Coursework tab.
- \_\_\_\_\_ Check with your advisor on UW Health requirements, if working in hospital areas

## On-going Checklist

- \_\_\_\_\_ Network with senior students to learn about program opportunities, faculty, courses, and more.
- \_\_\_\_\_ Inform the Medical Physics Office of any changes (*e.g., address, phone, advisor, funding, etc.*)
- \_\_\_\_\_ Pick up your mail and check your email regularly!
- \_\_\_\_\_ Update your CV/ resume on a bi-annual basis (at least)
- \_\_\_\_\_ Update Education Portal with relevant information re: committees, coursework, etc.
- \_\_\_\_\_ Update IDP

## Program Completion Checklist

- \_\_\_\_\_ Make sure all incomplete grades (INC) are taken care of and final grade changes are reported.
- \_\_\_\_\_ Complete the **Exit Form** on the Education Portal (tab number 11).
- \_\_\_\_\_ Return all Medical Physics **keys** and library **books** that you have checked out.
- \_\_\_\_\_ Congratulations!!
- \_\_\_\_\_ Stay in touch – we want to know where you are going and how your Medical Physics career is growing.

## Getting Started in Medical Physics at Wisconsin

The preceding page of this handbook contains a list of procedures to follow to get started in the department. Below is a more in-depth look at many of those items on the check list.

1. Enroll for classes. When you were admitted into the program, the Office of the Registrar informed you that you are eligible to enroll on or after a specific date. Registration for classes is done on-line. You will need your campus ID number to register.
2. Once you are enrolled and arrive on campus, you can get your picture student ID card, or WISCARD. This is issued at UW Union South. You will need your ID number as well as a photo ID, such as your passport, driver's license, or other official government issued ID.
3. Verify your mailing address on **My UW** at: <https://www.wisc.edu/> .
4. Pay your tuition/fees at the Bursar's Office (*watch deadlines because they charge fines for overdue payments*). Segregated fees are due the first Friday of the last month of the term (Fall/Spring) and the first Friday of the summer term.
5. Pick up a free Madison Metro bus pass at the Union South.
6. **Take Radiation Safety Training**, Radiation Safety 101: Radiation Safety for Radiation Workers (RSRW) – Part I 2020 <https://www.talent.wisc.edu/Catalog/Default.aspx?CK=66329>.
7. Check with your advisor if you need a radiation film badge. Additional training has to be completed. The badge must be worn in many areas. See <https://ehs.wisc.edu/radiation-safety-training/>
8. Take HIPAA training (see Mandatory HIPAA training below.)

### **Desks, Cubicles**

The Medical Physics Department attempts to locate all students in study and work areas in close proximity to their advisor. For the majority of students, this means the student will have space either in a study carrel or a cubicle in the L1 or B1 module of Tower 1 of WIMR. Other areas that may be closer to the student's work area and to their advisors.

The Medical Physics Administrative Support Staff coordinates the space requests for Medical Physics graduate students and post-doctoral fellows. To get a cubicle, the student's advisor makes the request. There may be a time when all students cannot be accommodated because of the large number of trainees currently working with Medical Physics faculty. However, the administrative staff personnel for Medical Physics and Radiology do their best to accommodate all requests as soon as possible.

### **Computers**

The department and the university support extensive computational resources for communication, e-mail, word processing, scientific computing, image processing, and presentations. The department's goal is for each student to have access to a desktop computer.

Computers generally are provided through the student's research group, working in partnership with the Medical Physics Department. Once a computer is made available, the IT Support staff member for the Medical Physics Department works with students to set up the system, explains policies and procedures, and installs software and updates when appropriate. Students should consult with their advisor on acquiring a desktop computer. In some situations, it may not be possible to provide each student with a personal desktop system. A limited number of shared computers are available in shared office space. The IT Support staff member is the contact to set up an account on these systems.

Since moving into WIMR in 2008, we experienced three flooding situations, one resulting in serious damage to computational resources. Students should avoid putting computers and other electronic gear on the floor as such placement previously resulted in loss of data and costly repairs.

Laptop computers, tablets, and other wireless devices can be used throughout Wisconsin Institute for Medical Research (WIMR). Access to the wireless portal is automatic with most wireless devices. Wireless access can be obtained using UWNet or eduroam SSIDs with an agreement that students will abide by the IT policies and procedures of the School of Medicine and Public Health and the University. Configuring devices to use the eduroam SSID will allow students to connect to eduroam SSIDs on other academic campuses using UW-Madison credentials. The Medical Physics Department rules and regulations are found at: <https://www.medphysics.wisc.edu/intranet/>

### **Education Portal**

Besides the handbook, the most important resource for student information and progression is the [Education Portal](https://www.medphysics.wisc.edu/intranet/). Students can access this here: <https://www.medphysics.wisc.edu/intranet/> and should become familiar with the components it contains. While faculty will input information into the portal such as examination results and committee approvals, it is also a significant place to add, update and confirm information for students throughout the entire time in the Medical Physics Ph.D. program.

### **HIPAA Training (Mandatory)**

The HIPAA (Health Insurance Portability and Accountability Act) Privacy Rule is a federal law designed to help protect the privacy of patient health information. Employees and students of Medical Physics, which is a unit included within the University's Health Care Component, must be familiar with the basic principles of the Privacy Rule. Therefore, everyone must complete annual HIPAA training modules. Failure to complete UW-Madison's HIPAA training by the required due date may result in the loss of system access until training is completed, removal from courses or clinical rotations, and/or discipline as determined by appropriate leadership in consultation with the Office of Compliance.

Students will automatically be enrolled in the HIPAA training module. To access the HIPAA training course directly in Canvas, visit [HIPAA Privacy and Security Training](#). If the training course does not appear in Canvas for you, contact your HIPAA Privacy Coordinator to request enrollment. Contact [Mitchell Sabez](#) to be enrolled if the training does not appear in your Canvas account.

For more information regarding HIPAA policies, please go to the Office of Compliance webpage: <https://compliance.wisc.edu/hipaa/training/>


Remember – this is an annual requirement and there is a new course/certification each year.

## **Course Enrollment Information**

### **Semester Registration Procedures for all: Web Enrollment**

Students must register for classes prior to the fall and spring semesters and prior to the summer session. Information and detailed instructions may be found at the [Registrar's Homepage](#).

#### **Quick steps**

1. Log in at [my.wisc.edu](http://my.wisc.edu). Select the Academic Navigator widget, then select the Course Search & Enroll widget.
2. Choose a term.
3. Search for the class(es).
4. Choose the section(s) that fit your schedule.
5. Follow instructions for choosing number of credits (if this is a variable-credit class).
6.  Save the course to your cart.
7. Resolve any validation errors (which explain why you may not be eligible for the class).
8. In the cart, select the class.

9. Select the "Enroll" button.
10. Review your enrolled classes in the "Enrolled" list on the "My Courses" tab to confirm that you have successfully enrolled in the correct section.

**Please pay attention to the registration and fee payment deadlines throughout your graduate studies. Students who do not register by the deadline will need to request late registration permission from the Graduate School Dean and have to pay a late fee.**

### ***Late Registration Appeal Process***

Under extenuating circumstances, the Graduate School Dean may consider an appeal to register after the deadline. The appeal requires the following:

- 1) Letter from advisor on department letterhead stating why the student didn't register by the two week deadline and why the student needs to be registered.
- 2) Completed Course Change Form requesting to add courses.

The above items are sent to the Dean of the Graduate School.

### ***Late Payment Fees***

It is important to pay tuition and fees, whether enrolled in one or multiple sessions, by the due-date on the Student Account Invoice. A \$100 fee is assessed for payment made after the due date shown on the invoice, and other serious consequences may also result for summer and future terms. Questions should be directed to the Student Accounts Section, Bursar's Office, at (608) 262-2367. Before appealing a late fee, review the information at this site, to be sure of eligibility then follow the directions <https://bursar.wisc.edu/student-tuition-account/late-payment-fee-appeal>.

### ***A Grade of Incomplete***

An instructor may, at their discretion, assign the temporary grade of "Incomplete" to a student who fails to complete the work in a particular course. Each "Incomplete" must be replaced by a permanent grade by the end of the next semester. The course instructor will assign a permanent grade on the basis of what the student has accomplished in the course by that time. To remove an incomplete, the student must finish and turn in the coursework to the course instructor. The student should then request a grade change from the course instructor, who can enter the grade change online.

### ***Pass-Fail Privilege***

Students may take a course pass/fail if it is not used to meet general degree or major course requirements. (Generally, the instructor is not aware the course is being taken as pass/fail, and a grade of A, AB, B, BC, or C is reported as **P**; D or F is reported as **F**. Other courses, designated as credit/no credit, are offered for credit (**Cr**) or no credit (**N**); these courses are labeled in the Timetable. No grade points are assigned for courses taken pass/fail or credit/no credit; these credits are not averaged into a student's GPA. For information, call the Registrar's Office, (608) 262-3811.

### ***Registering for Independent Study/Research credits***

Non-dissertator students consult with their advisor on when to take independent study/research coursework, usually MP990, throughout their program. In order to ensure the student and the advisor are aware of work to be done as an independent study, permission is needed to enroll. The student should meet with the advisor, discuss the work load and outcomes and then determine the appropriate number of independent study credits needed each semester. The student and/or advisor can send an e-mail to the Educational Programs Coordinator, and they will grant permission to enroll. There may be times when a student would like to do independent work with someone other than their faculty advisor. The same process should be followed in this case.

Dissertators should contact the Educational Programs Coordinator for permission to enroll with their advisor for the MP990 required three credits each term. If a dissertator wishes to take a course other than MP990 for the required three credits, they need to get approval from their advisor.

## **Progression Information and Requirements**

### ***Compacts***

In order to promote a positive relationship between graduate students and their advisors, the Department of Medical Physics has developed a compact to offer a set of broad guidelines that are meant to initiate discussions about this relationship. This compact is modeled after the Association of American Medical Colleges (AAMC) compact (2017). Compacts are emailed to students and faculty advisors.

There are several potential applications/uses for this document, and the broad goal is that it will be used in the following ways:

- As a starting point for discussions between graduate students and advisors about the issues addressed by the compact
- As part of the orientation for new graduate students
- As part of a regular and ongoing discussion between graduate students and research advisors
- As a tool to initiate the development of additional programs and support services for graduate students within the Department of Medical Physics

Students and advisors must review the compacts which will then be signed by the advisor and each matriculating graduate student or newly-appointed postdoc. A signed copy of the compact should be maintained by both the advisor and the trainee. Graduate students matriculating in 2019 will be reminded of these requirements for review and signing of the compacts at the orientation in August.

Please note that individual laboratories may have additional guidelines/requirements. These should be reviewed and discussed similarly to this document. Those requirements are “above and beyond” the fundamental understandings captured in the attached compacts, which were based on AAMC versions that are commonly used by other academic health institutions.

### ***Individual Development Plan (IDP)***

The UW-Madison Graduate School requires completion of an Individual Development Plan (IDP) process for all graduate students. An IDP should be started during the first fall semester of enrollment and must be updated and reviewed annually by every graduate student by March 31. This IDP process is meant to be advantageous to students as it allows them to perform a detailed self-assessment and use the information from that assessment to establish specific goals to be achieved while in the program. For those who have not completed an IDP, or for those revisiting the process in the fall semester, more information is available at <http://grad.wisc.edu/pd/idp>. The Graduate School will notify students each fall semester, typically in October/November of each year, to meet with their research advisor and complete/update the IDP. The Medical Physics Program has implemented an online IDP submission process using the Education Portal. The required IDP information, along with an online additional component requesting information required for reporting to the SMPH, UW-Madison campus, and our accreditation body (CAMPEP), is updated by the student each year. Note that the IDP should be reviewed with the advisor and completed by the end of March of the first year and by each subsequent March thereafter. Note: The annual mentoring committee meetings (see section “Pre-Dissertator Mentoring Committee”) are separate. They do not need to happen at the same time.

### ***Poster Presentation***

Pre-dissertator graduate students in Medical Physics who have completed their first year will be required to present a poster detailing their research activities over the course of the year at an annual intramural research conference. Graduate students who joined the program prior to 2018 and earlier will be strongly encouraged to present if they have not reached dissertator status, even though participation is not

mandatory for this cohort of students. The research conference will be open to the public and will be advertised in advance to ensure active participation by both the students as well as faculty and other researchers and will likely be aligned with the T32 Symposium when it is scheduled.

### ***Satisfactory Academic Progress Medical Physics Department***

Performing research and communicating findings from such research are key aspects of education and training for both the Terminal M.S. Degree and Ph.D. Degree programs in the Department of Medical Physics. Graduate Medical Physics students are expected to submit first-author abstracts for intramural or extramural presentations starting with their first year in the program and to document these presentations in the student's Education Portal.

Writing research reports and authoring or co-authoring research publications are critical parts of Ph.D. Degree education and training. All doctoral students are **required** to have *at least* one first-author, peer-reviewed journal publication or a submitted manuscript under peer-review in their area of research prior to their dissertation defense. Presentations and publications will be reviewed annually to determine satisfactory research progress. Dissertation defense warrants will not be issued until these requirements are completed and documented in the student's Education Portal. Any exceptions must be approved by the Graduate Committee or Department Chair three months prior to the defense date.

### ***Grade Point Average***

Students are required to maintain a 3.0 (B) grade-point average for the total program of graduate courses taken, not including research credits (MP990).

### ***Pre-Dissertator Mentoring Committee***

Medical Physics students will form a Pre-Dissertator Mentoring Committee to discuss and provide feedback on their academic and research path, beginning the first spring after matriculation into the program. The student will form this 3-member committee, comprised of at least two medical physics faculty members and must include the student's research mentor. For the purposes of committee membership, a medical physics faculty member is defined as any faculty who has an appointment in the medical physics department (zero percentage is OK) and has been approved to be a primary advisor for medical physics graduate students. They will meet with the committee once a year until the Preliminary Exam is completed successfully and the student becomes a dissertator. The student will present their previously submitted IDP to the committee at each meeting and obtain feedback on their goals regarding coursework and career objectives. The two non-advisor Mentoring Committee members may naturally continue as members of the student's Preliminary Exam Committee, but this is not required. After formation of the committee, update the Education Portal with the committee members and meeting dates.

### ***Student and Exchange Visitor Information System (SEVIS)***

SEVIS is an internet-based, electronic data collection system that allows schools and the U.S. Department of Homeland Security (DHS) to exchange data on the visa status of international students. The UW-Madison must report:

- Whether the student has enrolled at the school or failed to enroll.
- A change of the student's or dependent's legal name or address.
- Any student who graduates prior to the end date listed on the I-20.
- Academic or disciplinary actions taken due to criminal conviction.
- Whether the student drops below a full course of study without prior authorization from the DSO (Immigration regulations refer to international student advisers as "designated school officials" - DSOs).
- Termination date of academic program and reason for termination.

- Other data generated by standard procedures such as program extensions, school transfers, changes in level of study, employment authorizations, and reinstatement.
- Any student who fails to maintain status or complete his or her program.

Some examples of actions due to failure to maintain status include dropping from full-time to part-time enrollment without prior approval from the DSO, attending a school other than the one a student is authorized to attend, failure to apply for a timely transfer or I-20 extension or change in level of study, unauthorized employment, and failure to report a change of address.

Student records are updated in SEVIS every semester. Students who fail to maintain status will lose the privileges of their student visa and become subject to deportation. Specific consequences are severe and may include denial of reentry to the U.S., inability to move from undergraduate to graduate status, denial of requests for practical training, denial of requests to change visa status, and possible denial of all future visa applications.

For more information on SEVIS regulations contact International Student Services (ISS), 217 Armory and Gymnasium (Red Gym), 716 Langdon Street, 262-2044, [iss@odos.wisc.edu](mailto:iss@odos.wisc.edu), <http://iss.wisc.edu>; or visit DHS Office of Immigration and Customs Enforcement at <http://www.ice.gov/sevis>.

### ***Working with Animals***

Students and personnel working with animals must complete the Research Animal Resource Center (RARC): Animal User Online Certification training available through the same UW-RSP site. In order to be eligible to be listed on an IACUC protocol, certified completion of this course is necessary.

### ***Working with Human Subjects***

UW-Madison requires that all personnel engaged in human subject research and listed on an Institutional Review Board (IRB) protocol submitted to a UW-Madison IRB complete Human Subjects Protection training before approval of the protocol.

### ***Leave of Absence***

In some circumstances, it may be necessary for a student to temporarily leave the University for personal or other reasons. The following information is from the [Graduate School Academic Policies and Procedures](#). Students should notify their programs as well as the Graduate School Office of Admissions and Academic Services ([gsacserv@grad.wisc.edu](mailto:gsacserv@grad.wisc.edu)) of their intention to take a leave of absence. If students have pre-enrolled for a future term and plan to take a leave of absence, they must be sure to drop all courses before the first day of class. Previously enrolled students who wish to return to Graduate School should follow the instructions on the [Graduate School Admissions webpage](#).

## Department Requirements for the Master of Science Degree

This section describes the requirements for students on the Clinical Pathway seeking either a Ph.D. degree or a terminal Clinical/Research M.S. degree. Clinical Pathway Ph.D. students will earn a M.S. degree after completing the M.S. coursework and passing the Ph.D. Oral Qualifying Exam (Qualifier). Terminal M.S. students earn their degree after completing the M.S. coursework and either passing the Qualifier exam or completing a M.S. Thesis.

### ***Coursework Summary***

The Clinical/Research M.S. degree requires a total of 40 credits completed over two years (4 semesters). The coursework consists of 34 credits of Core Curriculum (33 credits of lecture courses + 1 credit lab), at least 2 credits of Advanced courses taken within the Dept. of Medical Physics, and 4 credits of Journal Club taken over 4 semesters. The Core Curriculum courses are listed in the CAMPEP Core Curriculum Section. The Anatomy/Physiology course may also be satisfied by Human Anatomy 337 or Physiology 335.

### ***Advanced Course Requirement***

Courses numbered 600 or higher in the Dept. of Medical Physics are considered Advanced Courses. Advanced courses can be used to tailor a two year course sequence to emphasize Imaging, Therapy, or Health Physics. Example course sequences are provided in the following pages.

The Advanced course requirement for the M.S. Degree is 2 credits minimum. This can be satisfied with a single 2-3 credit Medical Physics course (600+) or multiple Rad Lab courses (MP 662-666). Note: The Advanced course requirement for the Clinical Pathway Ph.D. is 9 credits minimum, but up to 3 of those credits can be taken outside of Medical Physics. For additional information, see 'Department Requirements for the Ph.D. Degree'.

### ***Suggested Coursework for Health Physics***

For the M.S. Degree with a Health Physics emphasis, students must take the same core courses (34 credits), as well as at least 2 credits of Advanced courses and 4 credits Journal Club. Additionally, students should take MP699 – an independent reading course on Health Physics Rules and Regulations (1 credit), and Nuclear Engineering 427 and 571 (5 credits total). This is a total of 46 credits for the M.S. Degree.

### ***Biological Science: Physiology/Anatomy Requirement***

MP 671 (Special Topics, This course has not been offered and is in development) Anatomy/Physiology or Human Anatomy 337 or Physiology 335 may be taken to satisfy this requirement. If a student has taken an anatomy or physiology course at another institution prior to being enrolled in the department, the student may request a waiver for this anatomy/physiology Department Requirement. To request a waiver, the student must contact the graduate program coordinator and provide a written request, which should include the course syllabus and detailed course schedule for the course taken by the student. A transcript showing the grade in the course should also be provided. The content of the course will be compared against the CAMPEP content requirements. Two Medical Physics faculty members will review the course description and either approve or deny the waiver request. For students who would like to request the waiver, they should do so in their first or second semesters so that they can appropriately plan their course schedules.

### ***Courses for Training Grant-Supported Students***

Students selected as Training Grant trainees may be required to take additional courses in the biological sciences and research methods. Each training grant program has specific requirements, so current and prospective training grant trainees should consult with the Training Grant coordinator of the specific program for details.



### ***Ethics and Responsible Conduct of Research***

All M.S. and Ph.D. degree students must complete the 1-credit, Medical Physics ethics course: MP701 *Ethics and the Responsible Conduct of Research and Practice of Medical Physics*. It is imperative that students understand that **course attendance is mandatory, and only a single excused absence is permitted for this course**. Students who fail to follow these requirements will be required to drop the course and retake it at a future date; this can delay progress toward degree completion.

### ***Satisfactory Progress***

Students working towards the M.S. degree must meet departmental criteria for satisfactory progress, as described in 'Progression Information and Requirements'. This includes but is not limited to maintaining a 3.0 (B) grade-point average for the total program of graduate courses taken, not including research credits (MP990).

### ***Requirements of the Graduate School for the M.S. Degree in Medical Physics***

[Requirements of the Graduate School](#) must be satisfied in addition to those of the department, including requirements for [minimum](#) and [maximum credits per term](#). More information can be found here: [Graduate School Academic Guidelines](#). As of Fall, 2022, the graduate school credit requirements state, "The Graduate School considers full-time enrollment to be 8-15 graded credits taken at 300 or above, excluding pass/fail and audit, during the fall and spring semesters, and 4-12 credits during the summer term. Dissertators are considered full-time at 3 credits."

### ***Other Requirements***

Seminar Attendance: Every semester all non-dissertator graduate students are **required** to regularly attend the weekly Medical Physics 900 Seminar to broaden their understanding of all aspects of Medical Physics. This is a required course for four semesters before receiving the M.S. degree. Students entering with an M.S. degree must also take the MP 900 Seminar sequence for four semesters.

Student and Exchange Visitor Program (SEVIS): See the section 'Progression Information and Requirements' for information on maintaining visa status for international students. Student records are updated in SEVIS every semester. Students who fail to maintain status will lose the privileges of their student visa and become subject to deportation. Specific consequences are severe and may include denial of reentry to the U.S., inability to move from undergraduate to graduate status, denial of requests for practical training, denial of requests to change visa status, and possible denial of all future visa applications.

Statistics Courses: Although not a requirement for graduation, it is strongly recommended that all students complete a graduate course in statistics. Students interested in following the path to ABR Board Certification should also keep in mind that AAPM Report 197 recommends a course in statistical procedures in the training program. The core course MP574 satisfies the ABR statistics requirement. Other options include Statistics 541 and 571. Students should discuss this with their advisor.

Maintenance of Training Certification: Students must maintain their certification of HIPAA training, and maintain any other relevant research-related training (e.g. for working with animal or human subjects).

### ***Terminal M.S. Degree***

Either a **Written Thesis** or **Successful Completion of the Oral Ph.D. Qualifying Exam** is required for students exiting the program with a **terminal M.S. degree**. Students with a GPA < 3.0 in two consecutive semesters will be moved to the terminal M.S. degree program. A minimum GPA of 3.0 is required to graduate with a M.S. degree from the UW-Madison Graduate School. If a student chooses the written

thesis path, then the thesis must be successfully defended to three or more faculty (inclusive of the student's advisor).

### ***MS Thesis***

An MS thesis should contain the following components:

- Abstract
- Table of contents
- Introduction and Problem Statement
- A comprehensive Literature Review, and statement of how the student's research contributed new knowledge to the field
- Around 2-3 chapters describing the original research performed to address the problem statement. Typically, at least one of these chapters should be publishable as a peer-reviewed journal paper.
- A Conclusion or Summary Chapter describing the new/novel contributions to the research.
- Possible future work in this research area
- Bibliography

It is recommended that the NIH grant format style is used for references. Below is an example. It works well to use single-spaces within an entry, and double spaces between entries.

Chen H, Varghese T, Rahko PS, and Zagzebski JA, Ultrasound Frame Rate Requirements for Cardiac Elastography: Experimental and in-vivo results, *Ultrasonics*, 2009; 49(1), 98-111.

The format of the thesis should follow the recommended formatting of a dissertation from the UW Graduate school, which can be found [here](#). Although the dissertation requires some items not required for an MS thesis (UMI Abstract and Copyright pages), the rest of the specific formatting guidelines should be followed for: line spacing, graphics, footnotes, endnotes, margins, page numbering, font size, title page, appendices, bibliography, equations, superscripts, and subscripts.

There is no minimum or maximum length of an MS thesis, but a good target length is around 75 pages, double spaced.

## **Structure of a two-year course sequence**

The four semesters of study on the Clinical Pathway each have a general theme:

**1<sup>st</sup> semester (Fall): Foundations in physics, math, biology, and ethics**

This is a fixed set of courses taken by all students in their first semester. The goal of this semester is to provide a solid foundation for all subsequent Medical Physics courses.

**2<sup>nd</sup> semester (Spring): Basic medical physics courses**

The 2<sup>nd</sup> semester covers imaging and radiotherapy oriented medical physics courses which build upon the foundational courses. Courses taken in this semester also prepare students for the advanced courses that they will take in the 3<sup>rd</sup> semester. Students should consult their advisors before selecting courses for this semester; see additional comments below.

**3<sup>rd</sup> semester (Fall): Advanced medical physics courses, basic courses, electives**

In this semester, students may choose from a number of advanced courses in imaging and radiotherapy. These should be aligned with the research interest of the student. Students will also take certain basic medical physics courses and elective courses in this semester.

**4<sup>th</sup> semester (Spring): Remaining required courses and electives**

In the 4<sup>th</sup> semester, students take any remaining courses in the CAMPEP core track. Generally, this will be the required spring courses that were not taken in the 2<sup>nd</sup> semester. Students may also take electives and/or advanced courses in this semester.

A significant amount of tailoring is possible within this general framework. Example course sequences are provided in the following pages.

Students should pay special attention to their course selection in the 2<sup>nd</sup> semester. Specifically, they should look ahead to the advanced courses offered in the 3<sup>rd</sup> semester, choose advanced courses which are aligned with their own studies (in consultation with their advisor), and then ensure that the necessary pre-requisite courses are taken in the 2<sup>nd</sup> semester. Some important 2<sup>nd</sup> to 3<sup>rd</sup> semester sequences are:

MP566 (Radiotherapy) → MP572 (Advanced Treatment Planning) or MP771 (Advanced External Beam Therapy)

MP580 (Medical Imaging with Ionizing Radiation) → MP581 (Laboratory for Clinical Medical Imaging with Ionizing Radiation) → MP777 (Computed Tomography)

MP578 (Non-ionizing Diagnostic Imaging) → MP710 (Advances in Magnetic Resonance).

This is not an exhaustive list of advanced courses with necessary pre-requisites. Students are responsible for making sure they know the pre-requisites of any courses they wish to take.

## **Typical Course Sequence for MS Degree in Medical Physics: Therapy**

### **1st Semester -- (Fall)**

- †§ Med. Phys. 501 -- Radiological Physics and Dosimetry -- (3 cr.)
- †§ Med. Phys. 573 -- Medical Image Science: Mathematical and Conceptual Basis -- (3 cr.)
- †§ Med. Phys. 510 -- Fundamentals of Cellular, Molecular, and Radiation Biology-- (3 cr.)
- †§ Med. Phys. 701 -- Ethics, Responsible Conduct of Research and Practice of Medical Physics -- (1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

### **2nd Semester -- (Spring)**

- †§ Med. Phys. 566 -- Physics of Radiotherapy -- (3 cr.)
- †§ Med. Phys. 588 -- Radiation Production and Detection -- (4 cr.)
- †§ Med. Phys. 580 -- The Physics of Medical Imaging with Ionizing Radiation -- (4 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

### **3rd Semester -- (Fall)**

- †§ Med. Phys. 569 -- Health Physics & Biological Effects -- (3 cr.)
- †§ Med. Phys. 671 -- (Special Topics) Anatomy/Physiology -- (2 cr.)
- †§ Med. Phys. 581 -- Laboratory for Clinical Medical Imaging with Ionizing Radiation (1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)
- Med. Phys. 772 -- Advanced Radiation Treatment Planning -- (3 cr.)

\*Advanced or elective: Examples:

- Med. Phys. 777 -- Principles of X-ray Computed Tomography -- (3 cr.)
- Med. Phys. 679 -- Radiation Physics Metrology -- (3 cr.)
- Med. Phys. 547 -- Biomedical Optics -- (3)
- Med. Phys. 710 -- Advances in Medical Magnetic Resonance -- (2 cr.)
- Statistics 541, 571 or equivalent -- (3-4 cr.)

### **4th Semester -- (Spring)**

- †§ Med. Phys. 574 -- Medical Image Science: Applications -- (3 cr.)
- †§ Med. Phys. 578 -- Non-Ionizing Diagnostic Imaging -- (4 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

\*Advanced or elective: Examples:

- Med. Phys. 530 -- Medical Imaging Systems -- (3 cr.)
- Med. Phys. 770\*\*\* -- Advanced Brachytherapy Physics -- (3 cr.)
- Med. Phys. 780 -- Pharmacokinetic Modeling in Biomedical Imaging -- (2 cr.)
- Biological Science (e.g., Oncology 401, Neuroscience 524, Physiology 335)

### **Oral PhD Qualifying Exam (or terminal M.S. Thesis defense)**

† Required course.

§ Courses required to satisfy the CAMPEP core curriculum.

\* Electives are to be approved by faculty advisor.    \*\* Offered every EVEN Spring    \*\*\* Offered every ODD Spring

**Summary:** 34 credits from core courses [501, 510, 566, 569, 573, 574, 578, 580, 588, 581 (lab) and 701], 4 credits Journal Club, ≥2 additional advanced credits, for a total of 40 credits for the M.S. Degree. Students planning for a Ph.D. degree must take ≥9 advanced course credits.

Please note: Trainees on the Radiological Sciences (T32) Training Grant must take a course in cancer biology, usually Oncology 401 or 703 at some point before or while on the T32.

## **Typical Course Sequence for MS Degree in Medical Physics : Imaging**

### **1st Semester -- (Fall)**

- †§ Med. Phys. 501 -- Radiological Physics and Dosimetry -- (3 cr.)
- †§ Med. Phys. 573 -- Medical Image Science: Mathematical and Conceptual Basis -- (3 cr.)
- †§ Med. Phys. 510 -- Fundamentals of Cellular, Molecular, and Radiation Biology--(3 cr.)
- †§ Med. Phys. 701 -- Ethics, Responsible Conduct of Research and Practice of Medical Physics -- (1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

### **2nd Semester -- (Spring)**

- †§ Med. Phys. 566 -- Physics of Radiotherapy -- (3 cr. beginning spring 2021)
- †§ Med. Phys. 578 -- Non-Ionizing Diagnostic Imaging -- (4 cr.)
- †§ Med. Phys. 580 -- The Physics of Medical Imaging with Ionizing Radiation -- (4 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

### **3rd Semester -- (Fall)**

- †§ Med. Phys. 569 -- Health Physics & Biological Effects -- (3 cr.)
- †§ Med. Phys. 671 -- (Special Topics) Anatomy/Physiology -- (2 cr.)
- †§ Med. Phys. 581 -- Laboratory for Clinical Medical Imaging with Ionizing Radiation (1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

\*Advanced or elective: Examples:

- Med. Phys. 772 -- Advanced Radiation Treatment Planning -- (3 cr.)
- Med. Phys. 777 -- Principles of X-ray Computed Tomography -- (3 cr.)
- Med. Phys. 679 -- Radiation Physics Metrology -- (3 cr.)
- Med. Phys. 547 -- Biomedical Optics -- (3)
- Med. Phys. 710 -- Advances in Medical Magnetic Resonance -- (2 cr.)
- Med. Phys. 778 -- Machine Learning in Ultrasound Imaging -- (3 cr.)
- Statistics 541, 571 or equivalent -- (3-4 cr.)

### **4th Semester -- (Spring)**

- †§ Med. Phys. 574 -- Medical Image Science: Applications -- (3 cr.)
- †§ Med. Phys. 588 -- Radiation Production and Detection-- (4 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

\*Advanced or elective: Examples:

- Med. Phys. 530 -- Medical Imaging Systems -- (3 cr.)
- Med. Phys. 770\*\*\* -- Advanced Brachytherapy Physics -- (3 cr.)
- Med. Phys. 780 -- Pharmacokinetic Modeling in Biomedical Imaging -- (2 cr.)
- Biological Science (e.g., Oncology 401, Neuroscience 524, Physiology 335)

### **Oral PhD Qualifying Exam (or terminal M.S. Thesis defense)**

† Required course.

§ Courses required to satisfy the CAMPEP core curriculum.

\* Electives are to be approved by faculty advisor.    \*\* Offered every EVEN Spring    \*\*\* Offered every ODD Spring

**Summary:** 34 credits from core courses [501, 510, 566, 569, 573, 574, 578, 580, 588, 581 (lab) and 701], 4 credits Journal Club, ≥2 advanced credits, for a total of 40 credits for the M.S. Degree. Students planning for a Ph.D. degree must take ≥9 advanced course credits.

Please note: Trainees on the Radiological Sciences (T32) Training Grant must take a course in cancer biology, usually Oncology 401 or 703 at some point before or while on the T32.

## **Typical Course Sequence for MS Degree in Medical Physics: Health Physics**

### **1st Semester -- (Fall)**

- †§ Med. Phys. 501 -- Radiological Physics and Dosimetry -- (3 cr.)
- †§ Med. Phys. 573 -- Medical Image Science: Mathematical and Conceptual Basis -- (3 cr.)
- †§ Med. Phys. 510 -- Fundamentals of Cellular, Molecular, and Radiation Biology -- (3 cr.)
- †§ Med. Phys. 701 -- Ethics, Responsible Conduct of Research and Practice of Medical Physics -- (1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

### **2nd Semester -- (Spring)**

- †§ Med. Phys. 566 -- Physics of Radiotherapy -- (3 cr. beginning spring 2021)
- †§ Med. Phys. 588 -- Radiation Production and Detection-- (4 cr.)
- †§ Med. Phys. 580 -- The Physics of Medical Imaging with Ionizing Radiation -- (4 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)

### **3rd Semester -- (Fall)**

- †§ Med. Phys. 671 -- (Special Topics) Anatomy/Physiology -- (2 cr.)
- †§ Med. Phys. 569 -- Health Physics & Biological Effects -- (3 cr.)
- †§ Med. Phys. 581 --Laboratory for Clinical Medical Imaging with Ionizing Radiation 1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr.)
- † Nucl. Eng. 427 -- Nuclear Instrumentation Lab -- (2 cr.)
- † Med. Phys. 661, 662, or 665 -- Lab in Radiological Physics -- (1 cr.) (661 is 2 cr.)

\*Advanced or elective: Examples:

- Nucl. Eng. 305 -- Fundamentals of Nuclear Engineering -- (3 cr)
- Med. Phys. 772 -- Advanced Radiation Treatment Planning -- (3 cr.)
- Statistics 541, 571 or equivalent -- Statistics -- (3-4 cr.)

### **4th Semester -- (Spring)**

- †§ Med. Phys. 574 -- Medical Image Science: Applications -- (3 cr.)
- † Med. Phys. 699 -- H.P. Rules and Regulations -- (1 cr.)
- † Nucl. Eng. 571 -- Economic and Environmental Aspects of Nuclear Energy -- (3 cr.)
- † Med. Phys. 663 -- Lab in Radiological Physics -- (1 cr.)
- † Med. Phys. 900 -- Journal Club and Seminar -- (1 cr. P/F)

\*Advanced or elective: Examples:

- Med. Phys. 770\*\*\* -- Advanced Brachytherapy Physics -- (3 cr.)
- Biological Science (e.g., Oncology 401, Physiology 335, Neuroscience 524)

### **Oral PhD Qualifying Exam (or terminal M.S. Thesis defense)**

† Required course.

§ Course required to satisfy CAMPEP core curriculum.

\* Electives are to be approved by faculty advisor. \*\* Offered every EVEN Spring \*\*\* Offered every ODD Spring

**Summary:** 34 credits from core courses, 4 credits Journal Club, 1 credit MP699, ≥2 credits advanced course, 5 additional required credits [NE427, NE571] for a total of 46 credits for the M.S. degree. Students planning for a Ph.D. degree must take ≥9 advanced course credits.

Please note: Trainees on the Radiological Sciences (T32) Training Grant must take a course in cancer biology, usually Oncology 401 or 703.

### ***Graduation for Master Degree Students***

Students must be enrolled during the semester in which they expect to graduate; otherwise, they will be required to pay a degree completion fee. The only exception to this would be if the student finishes their work within a Graduate School defined Window Period after the semester ends. The degree is awarded at the end of the next semester, but enrollment is not necessary. In order to graduate, students must resolve all grades of Incomplete and have a cumulative GPA of at least 3.0. They must also fulfill the Minimum Credit Requirement of the Graduate School. (See: Requirements of the Graduate School for the M.S. in Medical Physics.) Midway through the final semester (October for a Fall Degree, March for a Spring Degree and June for an August Degree), students expecting to receive the M.S. degree should request to add the **Master's degree** through their MyUW Student Center. The Graduate School will conduct a degree completion check to ensure that all requirements have been fulfilled. If all conditions have been met, the M.S. degree addition will be reviewed, and the Educational Program Coordinator will approve this. Then the student must request an M.S. warrant. Once the warrant is ordered and then signed by the Graduate Committee Chair, then the M.S. degree will be granted. The student is responsible for the submission of the required information to be included in the commencement program if desired, for participating in the commencement ceremony, and having the diploma mailed to them. Students can obtain further information about the ceremony at UW's "Countdown to Commencement," four to six weeks prior to graduation. **The Commencement Hotline number is 608-262-9076.**

### ***Degree Certification***

Degrees are processed at one time after the fall, spring, or summer semester. Due to the volume of degrees awarded, it can take up to four months after the semester has ended to receive a degree certificate. Sometimes students need written verification that they have their degree prior to the time that they actually receive their degree certificate in the mail. Students may request a degree certification letter from the Registrar's Office (website <https://registrar.wisc.edu/contact/>; phone number 608-262-3811). The signed master's warrant must be submitted to the Graduate School and processed before the Registrar's Office will supply this letter.

## Oral PhD Qualifying Examination

### Purpose of the Medical Physics Oral Qualifying Exam

The purpose of the Medical Physics qualifying exam is to evaluate a student's preparedness for pursuing a PhD. The oral qualifier is a chance to evaluate the student's general medical physics scientific preparedness and ability to synthesize knowledge, as opposed to their ability to pursue a specific research project area. In the Medical Physics department, the oral qualifying exam is intended to complement the preliminary exam. In the preliminary exam, the student presents their research plan, and the committee evaluates the research project and the student's potential to successfully complete their aims.

### Additional Clarifications:

- Since part of the purpose of the exam is to evaluate the student's ability to synthesize knowledge, as noted above, it is distinctly different from the individual course tests, homework, and laboratory exercise.
- In the past, the Department of Medical physics proctored a written or oral qualifying exam, but has more recently consolidated into just an oral format. There are many advantages to an oral exam when evaluating a student's preparedness and ability to synthesize knowledge.
- Although Part 3 of the ABR certification exam process is an oral exam, the Medical Physics oral qualifier is not intended to be an ABR practice exam, nor is it designed to test for specific CAMPEP / ABR topics.
- It is quite common for graduate programs to administer both a qualifying and preliminary exam, although the format is quite variable from one department to another.

An **Oral Ph.D. Qualifying Exam (Qualifier)** is required for students pursuing a Ph.D. Degree. All students who take the qualifier must have completed the three fundamental 1<sup>st</sup>-semester core courses (MP501, MP510, and MP573) and at least one additional course of the student and advisor's choosing prior to the Qualifier. The additional course must be a 500 level or higher, but it may not be a Rad Lab, a journal club/seminar course (e.g. MP900), or a research credit (e.g. MP990).

The Qualifier will test the student on three core topics and an elective course and will be administered at the end of the second year of enrollment. The questions asked during the exam will be "integration style", which means they will test over multiple concepts. The student must pass the Oral PhD Qualifying Exam in order to subsequently take the Preliminary Exam.

**Oral-Exam Committee:** A student will be examined by members of an Oral-Exam Committee. The students' Oral-Exam committee will consist of three examiners from the three fundamental core courses, and an examiner for the elective course selected by the student and their advisor. The Graduate Committee Chair will select three members from the panel for each Oral-Exam Committee, with three named as alternates in case an appointed member is not available at the time of the exam due to unanticipated circumstances. The fourth examiner for the elective course must be selected by the student and their advisor and the name provided to the graduate committee chair. This examiner must agree to participate in the Oral Qualifying exam and is the responsibility of the student and advisor to obtain this agreement. The Graduate Committee Chair will appoint the fourth examiner to the student's Oral Exam Committee. A student's advisor cannot be a member of the student's Oral-Exam Committee.

**Examination Details:** Students will be tested in each area with 25 minutes allocated to each area. The student is advised to provide concise answers and avoid lengthy responses unless requested by the examiner. Students may pass to the next question if they are not familiar with the topic.

**Individual Course Area Grading Criteria:** Students will be graded on their understanding of



the fundamental medical physics concepts as well as integration of knowledge across core topic areas. Grading for each course in the Oral PhD Qualifying Exam will be performed on a 5-point scale listed below in order to provide feedback to the student.

- 1- Does not meet expectations (substantial deficiencies)
- 2- Below expectations (some deficiencies)
- 3- Meets expectations
- 4- Exceeds expectations
- 5- Exceptional performance

A grade of '3' or higher will be considered a pass for that course area. A grade of '2' or lower will be a fail, and the student will be responsible for re-examination of this area.

Students must answer at least 60% (minimum requirement to obtain a score of 3) of the questions correctly to obtain a pass in each section of the qualifier. If students require additional help with questions, this will be noted and scored accordingly. Examiners will cover as much of the fundamentals in the core subjects as reasonably possible within the time limit.

A score of '1' indicates that the student answered less than 20% of the questions correctly, while a score of '2' indicates that less than 40% of the questions were answered correctly. A score of '4' is reserved for students who answer 80% of the questions correctly, and '5' for 100% of the questions. Examiners are requested to use the entire range of scores over the 5-point scale.

Sometimes a question contains multiple sub-questions. Partial credit will be awarded for partially correct answers.

Scores will be entered by each committee member immediately following the examination on the Education & Training portal. A score of '1' or '2' requires a brief explanation in an associated text box. The committee will then deliberate to reach a consensus decision. Students will be provided consolidated comments and suggestions for improvement, if any, prepared by the committee. Critical thinking and reasoning skills will be addressed as a written comment to provide feedback to the student.

**Overall Oral Qualifier Disposition:** Students will be provided with an overall disposition of their qualifier results. The following are the three possible dispositions:

**1. Unconditional Pass:** Any examinee who passes all four subject areas will obtain an 'Unconditional Pass'.

**2. Partial Re-examination:** Students who pass two or three of the four subject areas will be eligible for a re-examination on the failed subject area(s) that they did not pass. The re-examination process will be the same as the original examination process but will only address the specific subjects that were not passed initially. Partial re-examinations sessions will include the same examiners from the courses in which the student was found to be deficient, with 25 minutes assigned to each subject. Following the retake, a decision of Pass or Fail will be made by the entire 4-member panel. A decision of 'Fail' on the re-examination will cause the student to be transferred from the Ph.D. degree program to the terminal M.S. degree program, where the student must complete and defend a written M.S. thesis.

**3. Complete Re-examination:** If a student passes one or zero subject areas, the student will be scheduled for a re-examination for all sections of the Oral Qualifying Exam. If a student is required to be 're-examined' after the Oral Qualifying Exam on their first attempt, the student will be given one more opportunity, 2 or 4 months later, to retake the entire exam. The same procedure used for the first attempt at the Oral Qualifier will be

followed for the complete re-examination. Following the retake, a decision of Pass or Fail will be made by the 4-member panel. Three of the four members must agree with the decision for a Pass.

A decision of 'Fail' on a second attempt will cause the student to be transferred from the Ph.D. degree program to the terminal M.S. degree program, where they will need to complete and defend a written M.S. thesis. These students can petition to re-take the Oral PhD Qualifier Examination while enrolled in the MS Degree Program if recommended and supported by their current research advisor. This petition will be reviewed by the Oral PhD Qualifier Committee, which will decide whether to support the petition. If the student is allowed to re-take the Oral PhD Qualifier Examination and passes it, the student will be readmitted to the PhD Degree Program after defending their MS Degree thesis. This option is only allowed one time.

**Note on Scheduling Re-Examinations:** Students will be able to schedule reexaminations either at 2 months or 4 months after the initial qualifier exam. The Graduate Committee Chair will schedule all re-examination(s) for a specific day or days after being notified by the student via email based on their choice of 2 or 4 months after the initial exam.

**Note on Re-examination Results**

After the re-examination, it may take the committee several weeks to reconvene to discuss the outcome. Students should expect this to take longer than the two weeks for the initial qualifier exam.

**Duties of the Oral Qualifier Committee Chair:** The oral committee chair, following a consensus meeting with all the examiners, will summarize the comments from the committee members who have examined the student and submit a consensus report to the Oral Qualifying Committee members via the Medical Physics Education Portal. After all members approve the consensus report, the report will be submitted to the Graduate Committee Chair. The Graduate Committee Chair will release individual reports to the examinees via the Medical Physics Education Portal after reports on all students taking the oral qualifier exam are received. Completion of this process will not take more than 2 weeks. It is possible that release of results could be delayed if an external examiner does not provide the results in a timely manner.

# Department Requirements for the Ph.D. Degree

## ***Ph.D. Candidacy***

To be considered for candidacy for the Ph.D. degree, a student must pass the Oral PhD Qualifying Examination. The student must also have demonstrated superior promise for research and be recommended for the Ph.D. program by the research advisor.

## ***Clinical Pathway Coursework***

Students on the Clinical Pathway take the coursework required for the Clinical/Research M.S. degree, including the CAMPEP Core Curriculum. See 'Department Requirements for the M.S. Degree' for details. Additionally, doctoral students must meet the Advanced course requirement and additional course requirements described below.

**Advanced Course Requirement:** Students on the Clinical Pathway are required to complete 9-credits of advanced coursework prior to completion of their doctoral degree. Advanced courses are defined as those at the 600 or higher level. At least six of the advanced course credits must be from courses in the Medical Physics department. Typically this requirement is satisfied by taking two advanced courses in the 2<sup>nd</sup> year and one advanced course in the 3<sup>rd</sup> year.

**Additional course requirements:** In addition to the course requirements for the Clinical/Research M.S. degree, Ph.D. degree students must take additional courses for a cumulative total of at least 54 graduate credits (greater than and including 300 level) for completion of the Ph.D. These graduate credits can include research and independent study credits, and one elective advanced course that may be taken outside of the department.

Students supported by the Radiological Sciences Training Grant must take at least one course in cancer biology, such as Oncology 401 or 703.

## ***Inter-Disciplinary Pathway Coursework***

Students who choose the Inter-Disciplinary Pathway Ph.D. must complete at least 42 credits of coursework and at least 54 total graduate credits. Of the 42 credits coursework, at least 24 credits must be from Medical Physics courses, or courses cross-listed with Medical Physics. The 24 credits includes the 1<sup>st</sup> semester Core Curriculum courses (MP501, MP573, MP510, MP701) which all Medical Physics graduate students are required to take, and it cannot include research credits, independent study, or Journal Club. Beyond this, the total 42 credits of coursework may be satisfied through any graduate-level courses from any department, provided they are numbered 500, or higher and Department approval has been obtained (see the section 'Planning a Pathway'). The remaining 12 credits (out of 54) are satisfied through 4 credits of Journal Club and 8 credits which may be taken as research credits, or a mix of research credit and elective courses numbered 300 or higher. There is no Advanced medical physics course requirement.

Students supported by the Radiological Sciences Training Grant must take at least one course in cancer biology, such as Oncology 401 or 703.

**Course Sequence Design:** Inter-Disciplinary Pathway students should select courses in consultation with their advisor, and then seek approval from the Graduate Committee. See the section 'Planning a Pathway' for details. To assist in the planning process, several example sequences are provided below.

## **Example Course Sequence for Inter-Disciplinary Ph.D.**

The following example is for a student focused on MRI and computational methods.

### **1st Semester – (Fall):**

- †§ Med. Phys. 501 – Radiological Physics and Dosimetry – (3 cr.)
- †§ Med. Phys. 510 – Fundamentals of Cellular, Molecular, and Radiation Biology – (3 cr.)
- †§ Med. Phys. 573 – Medical Image Science: Mathematical and Conceptual Basis – (3 cr.)
- †§ Med. Phys. 701 – Ethics, Responsible Conduct of Research – (1 cr.)
- † Med. Phys. 900 – Journal Club and Seminar – (1 cr.)

### **2nd Semester – (Spring):**

- § Med. Phys. 574 – Medical Image Science: Applications – (3 cr.)
- § Med. Phys. 578 – Non-Ionizing Diagnostic Imaging – (4 cr.)
- Med. Phys. 530 – Medical Imaging Systems – (3 cr.)
- Comp. Sci. 540 – Introduction to Artificial Intelligence – (3 cr.)
- † Med Phys. 900 – Journal Club and Seminar – (1cr.)

### **3rd Semester – (Fall):**

- Med. Phys. 651 – Methods for Neuroimaging Research – (3 cr.)
- Med. Phys. 710 – Advances in Medical Magnetic Resonance – (3 cr.)
- Comp. Sci. 539 – Introduction to Artificial Neural Network and Fuzzy Systems – (3 cr.)
- †§ Med. Phys. 671 -- (Special Topics) Anatomy/Physiology -- (2 cr.)
- † Med Phys. 900 – Journal Club and Seminar – (1 cr.)

### **4th Semester – (Spring):**

- Com. Sci 540 – Introduction to Artificial Intelligence – (3 cr.)
- Stat. 525 – Linear Optimization – (3 cr.)
- Comp. Sci. 760 – Machine Learning – (3 cr.)
- † Med Phys. 900 – Journal Club and Seminar – (1 cr.)

## **Oral PhD Qualifying Exam**

- † Required course on Inter-Disciplinary Pathway
- § Part of the CAMPEP Core Curriculum.

The above course sequence has:

- 47 total graduate credits.
- 43 course credits (numbered 500+, not including research, independent study, or Journal Club), which meets the 42 credit minimum.
- 28 Med Phys course credits (not including research, independent study, or Journal Club), which meets the 24 credit minimum. The first semester core courses are included, as required.
- 4 Journal Club credits, as required.

To complete the required minimum 54 graduate credits, the student can take an additional 7 credits in the form of research credits, or a combination of research credits and elective courses numbered 300 or higher.

## **Example Course Sequence for Inter-Disciplinary Ph.D.**

The following example is for a student focused on radiation therapy planning an industry career.

### **1<sup>st</sup> Semester – Fall:**

- †§ Med. Phys. 501 – Radiological Physics and Dosimetry – (3 cr.)
- †§ Med. Phys. 510 – Fundamentals of Cellular, Molecular, and Radiation Biology – (3 cr.)
- †§ Med. Phys. 573 – Medical Image Science: Mathematical and Conceptual Basis – (3 cr.)
- †§ Med. Phys. 701 – Ethics, Responsible Conduct of Research – (1 cr.)
- † Med. Phys. 900 – Journal Club and Seminar – (1 cr.)

### **2<sup>nd</sup> Semester – Spring:**

- § Med Phys 566 – Physics of Radiotherapy – (3 cr.)
- § Med Phys 588 – Radiation Detection and Production – (4 cr.)
- § Med Phys 580 – The Physics of Medical Imaging with Ionizing Radiation – (4 cr.)
- † Med Phys 900 – Journal Club and Seminar – (1 cr.)

### **3<sup>rd</sup> Semester – Fall:**

- Med Phys 772 – Advanced Radiation Treatment Planning – (3 cr.)
- Med Phys 679 – Radiation Physics Metrology – (3 cr.)
- Industrial and Systems Engineering 520 – Quality Assurance Systems – (3 cr.)
- † Med Phys 900 – Journal Club and Seminar – (1 cr.)

### **4<sup>th</sup> Semester – Spring:**

- Med Phys 506 – Monte Carlo Radiation Transport – (3 cr.)
- Industrial and Systems Engineering 512 – Inspection, Quality Control, and Reliability – (3 cr.)
- Comp Sci 540 – Introduction to Artificial Intelligence – (3 cr.)
- † Med Phys 900 – Journal Club and Seminar – (1 cr.)
- § Med Phys 574 – Imaging in Medicine: Applications – (3 cr.)

## **Oral PhD Qualifying Exam**

- † Required course on Inter-Disciplinary Pathway
- § Part of the CAMPEP Core Curriculum.

The above course sequence has:

- 46 total credits.
- 42 course credits (numbered 500+, not including research, independent study, or Journal Club), which meets the 42 credit minimum.
- 33 Med Phys course credits (not including research, independent study, or Journal Club), which meets the 24 credit minimum. The first semester core courses are included, as required.
- 4 Journal Club credits, as required.

To complete the required minimum 54 graduate credits, the student can take an additional 8 credits in the form of research credits, or a combination of research credits and elective courses numbered 300 or higher.

## Preliminary Examination

Students who pass the Oral Ph.D. Qualifying Exam and who wish to pursue the Ph.D. degree must work with a Medical Physics faculty member/affiliate willing to serve as their research advisor. Students work with their advisor(s) to discuss possible areas of thesis research and additional course work. Most students select a thesis topic before or early in their second year of studies. A thesis proposal or prospectus will then be prepared for presentation to an examining committee in the **Preliminary Examination** before the end of the third year following matriculation. A six-month extension can be requested through the Education Portal if the student is close to completing the examination. Additional extensions may be granted only for unforeseen circumstances and must be approved by the Graduate Committee Chair and the Department Chair at the request of the student and with the written support of the student's advisor.

A student will be transferred to the terminal Master's program (without thesis requirement) if the Preliminary Examination is not completed by the end of the third year of enrollment. An extension of this deadline can be obtained by the student for unforeseen circumstances such as a change in research laboratory or an authorized leave of absence from the department. This extension has to be requested by the graduate student in writing and approved by the Graduate Committee and department chairs.

The purposes of this Preliminary Exam are to do the following:

- (a) determine whether the student has chosen a thesis topic and an approach that are likely to yield a successful dissertation;
- (b) estimate the student's understanding of the proposed research and competence to carry it out;
- (c) test the student's general understanding of the scientific method of research.

Purpose (a) suggests that the student should **not do** a large part of the dissertation research first, and then present it to the preliminary examination committee as a *fait accompli*. In case of failure to pass, the student's time will have been wasted. **To avoid this situation the preliminary exam is to be taken as early as practicable in the third year of graduate study.**

The exam consists of two parts for most students; the parts may be distinct (as described below) or may be combined without a break in the exam. The student will be informed of the format before the exam begins. **Part 1** is a 45-minute oral presentation by the student, detailing the research proposal as outlined in the prospectus. This is followed by **Part 2**, which is 45 minutes of questioning about the proposed research. (A **Part 3** of the exam, as described below, will be conducted for students who matriculated before 2015.)

**Preliminary Exam Scheduling:** Students should select their committee members, apply for their warrant and schedule their Preliminary Exam through the Education Portal <https://www.medphysics.wisc.edu/intranet/student/>. The Preliminary Exam will be conducted by an *ad-hoc committee* of a minimum of 5 members approved for each student by the Graduate Committee Chair for Medical Physics. It is recommended that members of this committee continue as the student's Thesis Committee to maximize the advantages that can be gained from this group. The student's research advisor will ordinarily be a member of the Prelim Exam Committee but may not chair it.

The graduate student, after consulting with the research advisor, will alert the Graduate Committee Chair to the need for Preliminary Exam committee formation at least **four weeks** before the earliest possible date of the exam through the Education Portal. The Educational Programs Coordinator will be notified after the committee is approved, and after all Preliminary Exam requirements are satisfied as tracked on the Education Portal. Please ensure that details Prelim Date/Time/Location, Preliminary Exam Title and for each Committee Member, their name, Net ID, Title, and Department, are updated on the Education Portal before requesting the

warrant. The **Preliminary Exam Warrant** will then be requested from the Graduate School by the Educational Programs Coordinator.

The Graduate School requires a Preliminary Exam Warrant to be requested at least three weeks prior to the exam and that all course-work incompletes be resolved before requesting the Preliminary Warrant. The graduate student and research advisor should complete all requirements on the Education Portal at least **four weeks** before the earliest possible date of the exam to enable scheduling the exam to everyone's satisfaction.

***Preliminary Exam Committee Composition:*** At least three members of the Preliminary Examination committee must have a non-zero faculty appointment in the Department of Medical Physics. The preliminary exam chair (selected by the student's research advisor) will not be the student's advisor and should be selected from one of the three Medical Physics faculty. The majority of members of the committee (at least three) must be tenured or tenure-track faculty. Two members may be from the Clinical Health Sciences (CHS) track, Clinician Teacher (CT) track, or hold a scientist position. One member shall be from outside the student's major department.

All five members must commit to participate at the scheduled exam time. Please note that Preliminary Exams typically take about two hours for the presentation, questions, discussion and deliberations.

A **prospectus** (research proposal) will be prepared by the student. The prospectus must consist of a maximum of 13 pages of single-spaced text plus figures. Please use at least an 11-point font. References do not count in the 13-page limit. The prospectus should consist of the following parts:

- a. Statement of the Research Problem and Specific Aims (1 page)
- b. Research Strategy (12 pages single spaced)
  - Significance
  - Innovation
  - Approach (for each Aim provide Preliminary Results, when available, and a Research Plan with experimental methodology, expected outcomes and pitfalls)
- c. Expected Timeline for completion
- d. References (not part of the 13-page limit)

The prospectus must be distributed to all committee members at least 2 weeks prior to the scheduled exam date, and an electronic copy of the prospectus should be uploaded to the Education Portal. All committee members are designated readers of the prospectus.

Students will be graded on the following criteria for the Preliminary Examination:

#### **Research Proposal**

- Organization of the proposal
- Clear description of peer-reviewed literature / prior research
- Clear research objectives / specific aims
- Clear expected outcome(s) and alternative strategies for each specific aim
- Proposal extends previously reported work
- Experimental or model design, statistical analysis and validation
- Quality of written proposal (grammar, spelling, clarity)

#### **Presentation and Examination**

- Organization of presented materials
- Clear and concise description of background and objectives / specific aims
- Appropriate use of communication aids and overall quality of the presentation
- Demonstrated understanding of relevant peer-reviewed literature

- Demonstrated understanding of subject matter and concepts
- Demonstrated appropriate critical thinking / reasoning skills
- Demonstrated ability to perform the proposed research

Grading for the Preliminary Examination will be performed on a 5-point scale listed below in order to provide feedback to the student.

1. Does not meet expectations (substantial deficiencies)
2. Below expectations (some deficiencies)
3. Meets expectations
4. Exceeds expectations
5. Exceptional performance

An average score of '3' from each committee member and across each category is needed to obtain a pass. Scores will be entered by each committee member immediately following the examination on the Education Portal. A score of '1' or '2' in response to any category requires a brief explanation in an associated text box. The committee will then deliberate to reach a consensus decision. Students will be provided the mean and standard deviations across categories along with consolidated comments and suggestions, if any, for improvement prepared by the committee chair.

The student must pass the Preliminary Exam in order to subsequently become a dissertator. A decision of Unconditional Pass, Conditional Pass, or Re-Examination will be made by the 5-member Preliminary Exam Committee. Four of the five members must agree with the decision for a Pass. For a Conditional Pass, the condition(s) must be clearly stated and should be completed within six months. If a student is required to be 're-examined' after the Preliminary Exam on their first attempt, the student will be given one more opportunity, within six months, to retake the exam. Following the retake, a decision of Unconditional Pass, Conditional Pass, or Fail will be made by the 5-member panel. Four of the five members must agree with the decision for a Pass. For a Conditional Pass, the condition(s) must be clearly stated and must be completed within six months. A decision of 'Fail' on a second attempt will cause the student to be transferred from the Ph.D. degree program to the terminal M.S. degree program.

Upon successful completion of all parts of the Preliminary Exam, the student's warrant will be electronically signed by the committee. In the case of a Conditional Pass, the prelim warrant will not be signed by the research advisor or submitted to the graduate school until all conditions are met. The exam must be passed completely within 6 months of the initial examination date.

### ***Summary of Procedure for Completing the Preliminary Exam***

1. Work closely with an advisor to define a research topic.
2. Complete all course requirements, including the 1-credit Medical Physics ethics course (MP701)
3. Write a research prospectus in a grant application format.
4. At least four weeks before the prelim exam, present a proposed five-member prelim committee and chair to the Graduate Committee Chair for approval.
5. Be sure there are no Incompletes (or "NR" entries) on the academic record.
6. Four weeks before the Preliminary Exam, update the Education Portal with the information required to secure a Preliminary Exam Warrant. The Preliminary Warrant Request needs to be requested from the Graduate School at least three weeks prior to the exam.

**The following conditions must be met before the request for the warrant can be made. Students are advised to begin addressing them at least four (or more) weeks before the expected preliminary exam date.**

- a) The student must have no course grades of "incomplete" (or "NR") on their record.
- b) The 1-credit ethics course requirement (MP701) must be completed.



7. At least two weeks before the preliminary exam, deliver the prospectus to the Prelim Committee by uploading it to the Medical Physics department portal.
8. The day of the preliminary exam, the Educational Programs Coordinator will send the warrant to the committee for e-signatures, Once it is signed, the Educational Programs Coordinator will submit it to the Graduate School.

***Responsibilities of Chair Person and Faculty on the Ph.D. Prelim Committee***

1. The prospectus has to be distributed at least 14 days before preliminary examination so that there is adequate time to thoroughly read it.
2. The Research Advisor designates a primary Faculty from the Medical Physics department as the Chair of the Preliminary Examination committee
3. Oral exam for the research proposal. This component for most students consists of two parts.
  - a. **Part 1** is a 45-minute presentation, giving an overview of significance of proposed research, Specific Aims and Preliminary Results.
  - b. **Part 2** is a question and answer session of 45 minute(s). The committee is to probe more deeply into the salient points of the proposed research to be conducted by the candidate.
  - c. For students who matriculated before 2015, the committee will conduct **Part 3** of the examination, which may consist of up to one hour of questions to further probe the candidate's knowledge of general Medical Physics principles, but not necessarily on the proposal itself. Graduate students who have to take Part 3 should schedule an additional hour for their Preliminary Examination.
4. The Preliminary Exam committee chairperson must notify the graduate student, committee members, Educational Programs Coordinator, Graduate Committee Chair, and Department Chair of the outcome of the Preliminary Exam via the Education Portal. In the case of a conditional pass, the warrant **must** not be signed by the research advisor or submitted to the Graduate School until all conditions are met. The Preliminary Exam committee chair or advisor must notify the graduate student, committee members, Educational Programs Coordinator, Graduate Committee Chair, and Department Chair using the Education Portal when these conditions are met. The signed warrant is then submitted to the Graduate School (electronically by the Educational Programs Coordinator.)
5. The Preliminary Exam committee will meet regularly to discuss research progress for a student with a conditional pass until the student is admitted to dissertator status.

## Dissertator Status

When a student has completed all required courses for the Ph.D. and has passed the Preliminary Examination, the student becomes a dissertator. As such, the student should only register for a total of 3 graded graduate level credits per semester. The 3 credits are usually in Medical Physics 990 (Research) but can include 1-3 credits of formal course work and/or Rad Labs related to the student's research, if approved by the student's advisor. This level of registration must be maintained continuously for spring, summer and fall semesters until the dissertation is completed and deposited to the Graduate School. **Failure to maintain such continuous registration will result in a penalty equal to the registration fee of 12 credits at the time the dissertation is deposited.**

**Note:** A dissertator is required to register for 3 credits per semester to qualify for an RA appointment. Audit and Pass/Fail courses are not allowed.

Dissertator status must be achieved by the appropriate deadline, generally before the first day of classes in a given semester, in order to qualify for the 3-credit requirement in that semester.

### **Annual meeting(s) with Dissertation committee:**

Each dissertator must schedule annual meetings with their dissertation committee to present a progress report on research activities. The committee will evaluate research progress and provide feedback on research direction. The Preliminary Exam committee chair will provide a brief summary of the deliberations and upload this to the Education Portal.

### **Research Seminar Presentation Requirement**

The student is expected to deliver a 30-minute seminar on their doctoral dissertation research before graduation. To schedule this presentation, contact the Course Instructor for MP900 to pick your presentation date. If you are unable to hold your seminar within the MP900 course, then you should work with your advisor to find a convenient date. This seminar will consist of at least a 20-minute oral presentation with the remainder of the time scheduled for questions. It is NOT meant to be a repeat or a preview of the dissertation defense presentation. At a minimum, there should be at least 5 minutes left for questions. The seminar will consist of the following parts:

- Background for general understanding. This should be a general review of the given area of study.
- Problem the student is seeking to solve. Why was this a problem in the area of study?
- Method(s) utilized to solve the problem
- Results & Conclusions

A general guideline would be to allot 5 minutes for each of the above sections.

### **Graduate Faculty Executive Committee Doctoral Dissertation Policy**

The Graduate Faculty Executive Committee (GFEC), the governance body responsible for graduate education policy at UW-Madison, has the following minimum requirements for doctoral dissertation committee membership and collaboration as outlined on their web-page <https://grad.wisc.edu/documents/committees/>. The Medical Physics program at UW-Madison employs more rigorous requirements, which are outlined in detail below.

## Final Dissertation Oral Defense

Upon completion of the research, the student is required to write a satisfactory dissertation reporting the results. A final dissertation oral defense on the contents of the dissertation will be done by a faculty committee representing the Medical Physics Department. This final dissertation oral defense may not be taken until all other requirements for the degree have been satisfied, the student's record is clear of incomplete grades, and at least 1 year has passed since taking the Preliminary Exam. The final dissertation oral defense must be completed within 5 years after passing the Preliminary Exam.

Writing research reports and authoring or co-authoring research publications is a critical part of Ph.D. training. All doctoral students are **required** to have *at least* one first-author, peer-reviewed journal publication or a submitted manuscript under peer-review in their area of research prior to their dissertation defense.

### ***Doctoral Dissertation***

Details on the formatting (thesis style) and other UW-Madison Graduate School requirements for doctoral dissertation are available at: <https://grad.wisc.edu/current-students/doctoral-guide/>. A doctoral dissertation should at a minimum contain the following components.

- Abstract
- Introduction, Problem Statement, Dissertation Outline
- A comprehensive Literature Review, and statement of how the dissertator's research contributed new knowledge to the field.
- Around 3-4 chapters describing the original research performed to address the problem statement. Typically, each of these chapters should be publishable as a peer-reviewed journal paper.
- A Conclusion or Summary Chapter describing the new/novel contributions of the dissertation.
- Possible future work in this research area.
- Bibliography

Currently, the Graduate School allows departments to choose their own reference style. Many students follow the NIH grant format for references, and an example is shown below. It works well to use single-spaces within an entry and double spaces between entries.

1. Chen H, Varghese T, Rahko PS, and Zagzebski JA, Ultrasound Frame Rate Requirements for Cardiac Elastography: Experimental and in-vivo Results, *Ultrasonics*, 2009; 49 (1), 98-111.

The Graduate School, however, does have final say on the dissertation style and the student has to follow those directions.

Dissertation Defense: The candidate will present their dissertation work to an Oral Defense Committee consisting of five or more members of the graduate faculty, with the research advisor serving as chairperson. The members of the Oral Defense Committee are selected by the candidate's advisor and the Chair of the Graduate Committee. This committee must be approved by the Graduate School.

### ***Composition of the Final Dissertation Oral Defense Committee***

Oral Defense Committees (sometimes called "Graduate Advisory Committees" or "Degree Committees") advise and evaluate satisfactory progress, administer preliminary and final examinations, evaluate a thesis or dissertation, and/or sign a degree warrant.

For the latest detailed information on UW Graduate School requirements for graduate committee makeup, please check the Graduate School web page on [Committees](#). The following is edited for Medical Physics:

The Executive Committee of the Medical Physics Department is responsible for approving the composition of all graduate committees. At least three members of the dissertation committee should have a non-zero appointment in the Medical Physics department.

Graduate School requirements for thesis committees (edited for Med Physics) are as follows:

1. The chair or co-chair of the committee must be Graduate Faculty from the student's program, *i.e.*, from Medical Physics. UW-Madison Faculty Policies and Procedures Section 3.05A stipulates that "the faculty of the Graduate School includes all university faculty defined in holding professional rank (professor, associate professor, assistant professor or instructor) in any department with graduate program authority, including those with zero-time appointments in such departments." Committee members who have retired or resigned from the University automatically retain Graduate Faculty status for one year; after one year they are permitted to serve as co-chair or other non-Graduate Faculty committee members.
2. Final Dissertation Oral Defense Committees must have at least 5 members, 3 of whom (and a majority if there are more than 5 members) must be UW-Madison tenured/tenure-track graduate faculty or former UW-Madison graduate faculty up to one year after resignation or retirement.

At least one of 5 members must be from outside of the student's major program. At least 3 members must have a non-zero faculty appointment in the Department of Medical Physics.

3. The required 5<sup>th</sup> member of a Final Dissertation Oral Defense Committee, as well as any additional members, retains voting rights. They may be from any of the following categories, as approved by the program Executive Committee (or its equivalent): graduate faculty, faculty from a department without a graduate program, academic staff (including emeritus faculty), visiting faculty, faculty from other institutions, scientists, research associates, and other individuals deemed qualified by the executive committee (or its equivalent).
4. To receive a Ph.D. degree, students can receive no more than one dissenting vote from their committee.

### ***Steps to Follow When Setting up the Final Dissertation Oral Defense***

#### **Scheduling the Final Defense:**

The final dissertation oral defense can be scheduled during the fall, spring or summer semesters via the Education Portal. Please note, however, it is Medical Physics policy that there will be no defenses during the last two weeks of a semester. This blackout period includes the week preceding finals week and the week of final examinations itself.

A defensible doctoral dissertation draft must be uploaded to the Education Portal at least **21 days** prior to the defense date. The dissertation defense will move forward, and a final warrant will **only be requested** from the Graduate School after the dissertation draft is uploaded. The Graduate School generally requires 21 days to process a warrant request. The dissertation should be a complete and final draft, and it should clearly communicate the scientific aspects of the research. The uploaded dissertation draft will be made available electronically to the Final Dissertation Oral Defense Committee from the Education Portal (hard copy is not recommended due to the high cost of printing). The dissertation will be evaluated based on this submitted draft and no further revision will be allowed prior to the defense. All committee members are designated readers of the dissertation draft.

Ph.D. Warrant: After uploading and distributing the dissertation draft, and three weeks prior to the final dissertation defense examination, a final warrant must be requested. The student indicates a request for the final warrant in the Education Portal to the Educational Programs Coordinator. After the Educational Programs Coordinator requests the warrant, the Graduate

School will issue this, listing the defense date and the committee members. The Educational Programs Coordinator will electronically distribute the warrant the morning of the scheduled defense. Then it will be electronically signed by the members of the Final Dissertation Defense Committee after a successful defense or when any needed corrections/additions are made.

If any changes are made in the membership of the Final Dissertation Defense Committee a revised Final Dissertation Defense Committee form must be submitted and approved via the Education Portal before the defense. Changes in dissertation title or date do not require a revised form.

The Final Dissertation Defense consists of two parts. During Part I, the candidate delivers a 45-minute presentation, giving an overview of the dissertation work and highlighting aspects that are important or significant. Questions during this period are usually to clarify points in the presentation or in the dissertation itself. Part I is open to Medical Physics faculty and students.

Part II is a question and answer session, lasting another ~45 minutes. During Part II, the Final Dissertation Committee probes more deeply into salient points of the dissertation as well as research related to that of the candidate. Part II is attended only by the candidate and the examining committee. The candidate then leaves the room for the committee's deliberations.

Students will be graded on the following criteria for the Final Dissertation Defense

#### **Dissertation**

- Demonstrates clear understanding of prior literature
- Extends previously reported work in specific research area
- Adequately describes and justifies research findings for each specific aim such that they could be independently reproduced
- Demonstrates a completion of the proposed specific aims (modified by research direction)
- Organization of the dissertation
- Quality of writing (grammar, spelling, clarity)
- Overall quality of the research
- Overall rigor of research components (theoretical/simulation/experimental/translational)
- Published results in peer-reviewed journal(s) or clear publication potential
- Recognized and applied principles of ethical and scientific / professional conduct of research

#### **Presentation and Examination**

- Organization of presented materials
- Clear and concise description of background and objectives / specific aims
- Appropriate use of communication aids and overall quality of the presentation
- Demonstrated understanding of relevant peer-reviewed literature
- Demonstrated understanding of subject matter and concepts
- Demonstrated appropriate critical thinking / reasoning skills
- Demonstrated an ability to synthesize knowledge

Grading for the Final Defense will be performed on a 3-point scale.

- 1- Does not meet expectations
- 2- Meets expectations
- 3- Exceeds expectations

An average score of '2' from each committee member and across each category is needed to obtain a pass. Scores will be entered by each committee member immediately following the examination on the Education Portal. A score of '1' in response to any category requires a brief explanation in an associated text box. The committee will then deliberate to reach a consensus

decision. Students will be provided the mean and standard deviations across categories along with consolidated comments and suggestions for improvement prepared by the committee chair.

After the Final Defense: The research advisor has to update the Education Portal on the outcome of the examination, finally when the final dissertation is completed. Successful completion of the final defense examination is followed by any final modifications to the dissertation. The dissertator has 30 days after the successful completion of the dissertation defense to upload a final version of the dissertation to the Medical Physics Education Portal. Committee member(s) who provide(s) scientific corrections to the dissertation draft will not sign the final warrant until the corrections approved by the committee during the defense have been completed. Corrections to the dissertation should be discussed with the committee member(s) requesting the changes. The dissertator should also upload an electronic version of the signed warrant to the Education Portal and all related information.

The dissertation must subsequently be deposited by the Graduate School's deadline if the student wishes to avoid having to register as a dissertator for the following semester. Go to [The Graduate School Guide to Preparing your Doctoral Dissertation](#).

Please submit a complete electronic copy of the dissertation to the Medical Physics Department administrative support staff. The Medical Physics Department will pay for binding copies of the dissertation for the Medical Physics Library, the Ph.D. recipient's advisor(s), and the recipient. If the Ph.D. recipient wishes to purchase additional copies for themselves or for their family members, they may do so at this time by contacting and arranging payment with the department administrative staff.

An electronic copy of the dissertation abstract should also be uploaded to the Education Portal (use the MS-word template and also e-mail to the Educational Programs Coordinator).

## ***Summary of the Requirements for the Ph.D. Degree in Medical Physics***

The Ph.D. degree is awarded after the student has finished their dissertation and has fulfilled all other requirements for the degree. The following list summarizes these requirements.

- a) Completion of the course requirements for the M.S. Degree in Medical Physics, plus such additional course work as may be specified by the student's advisor.
- b) Pass the Oral Ph.D. Qualifying Examination.
- c) Completion of the necessary credits in advanced coursework.
- d) Completion of a total of at least 54 graduate level credits, including the courses in a) and c), research credits, and other elective courses.
- e) An overall graduate-level grade-point average of 3.0 (B), not including research credits (990).
- f) Pass the Preliminary Examination.
- g) Presentation of a departmental seminar (usually during MP 900) on the dissertation topic.
- h) Completion of any courses or other conditions made by the committee during the Preliminary Examination.
- i) One first-author, peer-reviewed journal publication or a submitted manuscript under peer-review in area of research.
- j) Completion and defense of Ph.D. dissertation.
- k) Deposit electronic copy as required by the Graduate School.
- l) Send pdf of final dissertation to the Medical Physics department administration staff and request 3 bound copies.
- m) Send the signed final defense warrant to the Medical Physics Educational Programs Coordinator and upload it to the Education Portal.

## ***Responsibilities of Faculty on Final Dissertation Defense Committees***

1. A defensible doctoral dissertation draft should be distributed at least **21 days** before a scheduled defense date to allow adequate time for committee members to thoroughly read the dissertation. The dissertation should be a complete, final draft and should be grammatically acceptable.
2. Check for one first author, peer reviewed journal publication or submitted manuscript under peer-review in the student's area of research. The student should provide an electronic copy of the publication to members of the committee. The warrant should not be signed if this prerequisite is not satisfied.
3. The Final Dissertation Oral Defense consists of two parts.
  - a. **Part 1** is a 45-minute presentation, giving an overview of the research aims, highlighting areas that have been completed based on the Specific Aims of the preliminary examination.
  - b. **Part 2** is a question and answer session for 45 minutes. The committee will probe more deeply into the salient points of the dissertation and the research conducted by the candidate.
4. The student will complete any corrections requested to the dissertation draft. The student's advisor will not sign the warrant until the student satisfactorily completes revisions / corrections to the dissertation requested by the committee. After the final version of the dissertation is approved, the student's advisor will update the Education Portal confirming the dissertation is complete.
5. To receive a Ph.D. degree, students can receive no more than one dissenting vote from their committee. Committee members who feel that the dissertation defense does not meet acceptable standards will have to then sign the dissent line indicated on the dissertation warrant and justify their dissenting view of the dissertation.

### ***Requirements of the Graduate School for the Ph.D. Degree in Medical Physics***

[Requirements of the Graduate School](#) must be satisfied in addition to those of the department, including requirements for [minimum](#) and [maximum credits per term](#). More information can be found here: ***Graduate School Academic Guidelines***. As of Fall, 2022, the graduate school credit requirements state, “The Graduate School considers full-time enrollment to be 8-15 graded credits taken at 300 or above, excluding pass/fail and audit, during the fall and spring semesters, and 4-12 credits during the summer term. Dissertators are considered full-time at 3 credits.”. Regarding summer enrollment, it states, “The Graduate School does set lower minimum enrollment levels for some assistantships. Students should confirm minimum enrollment loads with their employing department.”

### ***Graduation for Ph.D. Degree Students***

Students must be registered for 3 graded graduate level credits during the semester in which they graduate. In order to graduate, students must not have any grades of incomplete and have a cumulative GPA of at least 3.0. They must also fulfill the Minimum Credit Requirement of the Graduate School. Information on [commencement ceremonies](#) can be obtained on the UW-Madison website. **The Commencement Hotline number is 262-9076.**

### ***Degree Certification***

Sometimes students need written verification that they do indeed have their degree prior to the time that they actually receive their degree certificate in the mail. Students may request a [degree certification letter](#) from the Registrar’s Office. The signed Ph.D. warrant needs to be turned into the Graduate School and processed before the Registrar’s Office will know that you have completed your degree. The degrees are processed one time after the semester has ended in December, May or August. Due to the volume of degrees awarded, it will take approximately three to four months after the semester has ended before you will receive your hard copy degree certificate.



# Department Criteria for Satisfactory Progress

## ***Students with Financial Assistance***

For a graduate student in the Medical Physics Department who is a research assistant, fellow or trainee, to be making satisfactory progress, the student must:

- 1) Maintain a minimum cumulative GPA of 3.0 for all courses taken while in the Medical Physics program and for all Department of Medical Physics courses. All research courses and all courses with grades of P, F, S or U are excluded from the average.

Any student who fails to meet the requirement above, will be placed on probation. Failure in the first semester of probation to obtain a 3.0 average for the semester *and a cumulative GPA of at least 3.0* will result in termination unless the student's advisor requests, and the department and the Graduate School approves, continued enrollment. *The particular courses that count toward the GPA in any probation semester must be approved in writing by the student's advisor and the Medical Physics Graduate Committee Chair(s) in order for the work to count toward returning the student to good standing.*

- 2) Acquire a research advisor by the beginning of the second semester.
- 3) Have taken the Oral Ph.D. Qualifier Examination before the fifth semester of study. If a pass is not obtained on the first attempt, the second (and last) attempt to pass the qualifier examination must be made no later than the end of the 5<sup>th</sup> semester.

A student who fails the Oral Ph.D. Qualifying Examination and re-examination will be transferred from the Ph.D. degree program to the terminal M.S. degree program, where they will need to complete and defend a written M.S. thesis.

In addition to the above, a Ph.D. candidate must:

1. Pass the preliminary examination by the end of the third year.
2. Make satisfactory progress in their dissertation research work, as judged by the advisor.
3. Satisfy all Graduate School requirements including the minimum credit requirement.
4. Produce at least one first-author, peer-reviewed journal publication or a submitted manuscript under peer-review in your area of research.
5. Present a departmental seminar on the Ph.D. dissertation topic.
6. Defend the Ph.D. dissertation by the end of the 7<sup>th</sup> year of graduate study. A candidate failing to pass the final oral examination within 5 years after passing the preliminary examination must retake and pass the preliminary examination to continue in dissertation status.
7. Submit the final complete dissertation to the Graduate School.
8. Send an electronic copy to the Medical Physics Department Administrative Support Staff. Three bound copies of the dissertation will be made, and one copy will be kept in the Department Library.
9. Submit required exit forms via the Educational Portal or to the Medical Physics Educational Programs Coordinator.

### **Students with No Financial Assistance**

For a graduate student in the Medical Physics Department who is not a research assistant, fellow or trainee, to be making satisfactory progress, the student must:

- 1) Maintain a minimum cumulative GPA of 3.0 for all courses taken while in the Medical Physics program and for all Department of Medical Physics courses. All research courses and all courses with grades of P, F, S or U are excluded from the average.

Any student who fails to meet the requirement above, will be placed on probation. Failure in the first semester of probation to obtain a 3.0 average for the semester *and a cumulative GPA of at least 3.0* will result in termination unless the student's advisor requests, and the department and the Graduate School approves, continued enrollment. *The particular courses that count toward the GPA in any probation semester must be approved in writing by the student's advisor and the Medical Physics Graduate Committee Chair(s) in order for the work to count toward returning the student to good standing.*

- 2) Follow Graduate School minimum course enrollment requirements  
<https://grad.wisc.edu/documents/enrollment-requirements/>.

### **Satisfactory Progress Regarding the Graduate School**

Graduate students are reminded that they must also make satisfactory progress as defined by the Graduate School. (See the current Graduate School Academic Guidelines, <http://guide.wisc.edu/graduate/#policiesandrequirementstext>.)

# Useful Information about the Medical Physics Department

## **General Information**

The **Department of Medical Physics** Administration Office is located at 1111 Highland Avenue, Room 1005 in the Wisconsin Institutes for Medical Research (WIMR) Tower I. Announcements for general campus information, events notices, course information, financial aid information, and job announcements are posted near the mailboxes and/or at the main entrance to the department. Student mailboxes are located in the hallway behind the main office. [Course descriptions](#) and other information about the program are available on the department's web site.

## **Reserving a conference room**

The Department's primary **Conference Rooms** are 1190 and 1121 in WIMR-1 and 2409 in WIMR-2. Meetings and some social functions of the department are held in these rooms. To reserve a conference room for meetings or to schedule it for a dissertation defense, utilize the Room Reservation System or contact Joya Anderson at 262-2171 or the Administration team at 265-6116.

## **Need a letter?**

There may be times when you need a letter from the department. Examples of such requests include verification of full-time student status for a professional membership, verification of degree requirements completed by the department (versus the University) for a residency program, verification of student status for reduced conference registration fee, verification of income for a loan, letter of appeal for late enrollment. We have a tab in your student portal (Tab 10) on the Medical Physics intranet to do so. Please use this form whenever you need to request a letter from the Department of Medical Physics.

## **Radiation Monitors**

Students working with radioactive materials or radiation sources in courses and research must wear radiation monitors. **Students should check with their Advisor to see if they are required to get a badge.** To obtain your Radiation Dosimetry Badges/Rings, you will need to take a radiation safety training class. Radiation Safety for Radiation Workers ("RSRW") training consists of a 2-part training module, made up of both an online and an in-person section. Certification for acquiring a badge requires completion of both Parts I and II. Training details can be found [online](#). After completing the course, you may apply for a personal radiation dosimeter by navigating to the following [website](#).

Periodically, your expired radiation monitor needs to be returned and exchanged for your new radiation monitor. Your monitor must be worn when you are working with radioactive materials. New monitors are distributed on a regular basis, at which time your old monitor needs to be returned. You will be responsible for paying for lost monitors. Please return them promptly.

## **University phone/fax lines**

University **phone lines** are for **official university purposes only**. To dial a number on campus, you dial the seven digits of the number. To reach an outside local line, dial "1" then the seven digit number. For long distance calls, dial a 1 + 1 + the area code + the seven digits.

The phone number for the **fax machine** in the department is (608) 262-2413. If you are expecting a fax, please have the sender identify your name on the top of the document.

## **Address Changes**

When your **address changes**, you will need to notify the Medical Physics Administrative Support Staff and/or Educational Programs Coordinator and also update the University's records in your MyUW at the University's web page located at: <http://www.wisc.edu>.

## **Grievance Policies**

The School of Medicine and Public Health has a detailed grievance policy for graduate programs, which can be found [here](#). The policy provides guidance for any student in a SMPH graduate

program who feels that they have been treated unfairly by a faculty member, staff member, postdoc, or student. The policy provides the right to complain about the treatment and to receive a prompt hearing of the grievance. The grievance advisor or program director listed online in the Guide and in this handbook may be approached for possible grievances of all types. They will spearhead the grievance response process for issues specific to the graduate program, including but not limited to academic standing, progress to degree, professional activities, appropriate advising, and a program's community standards. They will ensure students are advised on reporting procedures for other types of possible grievances and are supported throughout the reporting process. Any student who discusses, inquires about, or participates in the grievance procedure may do so openly and shall not be subject to intimidation, discipline, or retaliation because of such activity.

## Getting Involved

### ***Committee For Recognizing Equity, Diversity And Inclusion In Medical Physics (REDI)***

#### **Mission statement**

The mission of the Committee for Recognizing Equity, Diversity and Inclusion in Medical Physics (REDI) is to foster and build community within the Medical Physics Department by raising awareness and facilitating conversations which aim to encourage diversity and inclusion. The committee is led by medical physics graduate students with the support of the department.

**COMMITTEE EMAIL - [redi@medphysics.wisc.edu](mailto:redi@medphysics.wisc.edu)**

### ***Medical Physics Outreach Committee***

#### **Mission Statement**

The Medical Physics Graduate Student Outreach program aims to increase the visibility of medical physics by teaching community members about the role of physics in medicine as well as the educational and career opportunities in physics-based careers. Our focus is directed to the next generation of curious thinkers, especially under-represented groups in medical physics, by engaging them in conversation and hands-on medical physics activities. It is led by medical physics graduate students with the support of faculty and staff.

**COMMITTEE EMAIL - [outreach@medphysics.wisc.edu](mailto:outreach@medphysics.wisc.edu)**

### ***Joining the AAPM***

Since you have chosen to enter the field of Medical Physics, you should strongly consider joining the AAPM as a student member. There are many advantages to joining AAPM as a student. These advantages include, but are not limited to, decreased registration fees at AAPM meetings, online or paper subscriptions to the Medical Physics journal, an annually renewed Membership Directory, an annual Salary Survey (great incentive for completing your degree), and access to a list of current Medical Physics job openings. Joining is easy; download the application from

www.aapm.org/memb/prospect/studentapp.asp, fill it out, and email the form to membership@aapm.org. Along with your application, you will need to request a proof-of-enrollment letter from the Medical Physics department to be sent to the same email address. The current student membership dues for 2022 are \$50. The membership dues are usually waived for the first year, however a \$25 application fee is required. Additionally, it is strongly encouraged to join the North Central Chapter of the AAPM (NCCAAPM) during the AAPM application process to receive emails and updates of local meetings and student competitions.

## Travel Questions

### ***Who do I talk to about travel?***

First, you'll need to get permission from your advisor. There is a pre-travel form available on the Medical Physics Educational Portal you'll have to fill out. It asks where you're going, what you'll be doing and to estimate the cost of your trip. This will be an estimate, utilize [Concur](#) to take a look at available flights and costs, as well as the online calculator tool (found [here](#)) to estimate Per Diem and lodging maximums based on location and travel dates.

Second, depending on where your funding is coming from, you can come to the Med Physics office to book travel and registration with Administration team staff. If your funding is not Medical Physics funding you may have to work with coordinators in other departments to book travel. It's usually a good idea to start with the Administration team, even if you ultimately have to work with someone else.

Finally, if you are receiving a reward from the conference or the UW to use for travel, contact Mary Pierce (pierce6@wisc.edu). She can help you figure out the best way to approach that with the finance department.

### ***What information do I need to know in order to book travel?***

First and foremost, you'll need to know the funding string being used to cover the cost of this trip. You can get this information from your advisor, but it should also be on the pre-travel form, so the best practice would be to just fill that form out first. Second, you will need to know the conference dates, and location.

### ***Can I book travel on my own?***

You definitely can, however it is not recommended. The e-reimbursement system (located [here](#)) can take time depending on the expense, and e-reimbursements for travel expenses are taken care of only after you return from your trip, so the possibility of carrying around large expenses on your personal credit cards is very real. Keep in mind also that you absolutely must book your flights through Concur, the University travel agency. If you do not do this, you will not be reimbursed.

If a business flight is booked on a department credit card, be sure that you are sending the invoice to the admin who helped you book the flight to ensure that the charge is reconciled in a timely manner.

***Do I have to use a specific website or service to book travel?***

Yes. Airfare must be booked through Concur (the website Travel Incorporated) or over the phone through a Travel Incorporated agent. Hotels can be reserved through Concur/Travel Incorporated, or through the conference/workshop website.

Air BnB is now allowed by UW policy as of July 1, 2020. The total cost (including all taxes and fees) is still subject to the per diem rate. However, any travel expense purchased through any other method (Expedia, Travelocity, directly through the airline, etc.) is **not allowable and will not be reimbursed**.

***Can I use a department card to pay for lodging?***

Yes, you can, with a few exceptions. First, know that when booking hotels, the credit card you use to secure the reservation is not the one they will charge when you arrive, so you are welcome to book with your own card or the department card, typically it will not make a difference.

If you wish to use a department credit card to pay for the hotel upon checkout, you will need to contact the hotel to see if they offer a credit card authorization form. If they do, please have them forward that information to the Administration team member or another travel coordinator (depending on which department is funding your travel) so that they can take care of this for you. Keep in mind that hotels cannot be prepaid using a department card. If they require this, it cannot go on the department card, and you will have to pay your own way and be reimbursed later for it.

***Is it possible to add time to my trip or maybe travel to neighboring cities after I am done with my school affiliated travel?***

Sure, as long as you provide an airfare cost comparison, and have cleared it with your advisor. If you are booking travel with personal time prior to or after your UW-related business (conference, workshop, etc), you must include an airfare cost comparison.

You can do this by calling Concur/Travel Incorporated (470) 589-2205 and speaking with an agent directly, or saving a time-stamped page of flight options similar to your personal flight for dates relevant to business travel. If you call, let them know you are calling from the UW-Madison School of Medicine and Public Health and that you need a price comparison. They will need to know the dates of business related travel and whatever other additions you might need. They will e-mail you a flight comparison. You must then book your flight within 24 hours of receiving your comparison. If your comparison is outside of that time frame, it is considered invalid, and you will not be reimbursed. Best practice is to simply make the purchase over the phone when you are obtaining your comparison, but you are welcome to use the online web application (Concur) to do this, if that is your preference.

If your airfare (with personal time) exceeds the cost of airfare directly to and from the conference, the department card can only be used to pay for the amount of the comparison airfare. You are responsible for the cost of the difference.

***When do I need CISI Travel Insurance?***

Any time you are travelling abroad for business, you are required to enroll in CISI for the full duration of your stay, even if you are adding personal time (if your personal time spent abroad is less than 30 days total). You can be reimbursed for CISI, or connect with Mary Pierce to put the charges directly on a department card. If you are travelling

with others from the same lab and using the same funding, Mary can also do a group enrollment instead of everyone having to take the time to enroll individually.

<https://studyabroad.wisc.edu/health-safety/cisi-insurance/>

***Can my spouse/significant other/parent/or sibling travel with me? If so, how?***

Yes, this is possible. However, the department cannot cover any companion travel costs. You may still use Travel Incorporated for their airfare, either through Concur if you are booking their airfare separately, or over the phone if you are booking both tickets together (this is probably the better option).

***Do I need to keep my receipts?***

Some of them. As a general rule, keep anything you're unsure about. Receipts do not need to be kept for meals but cab fare, parking, lodging, and most anything else that is reimbursable, a receipt might be required. Many expenses under \$25 will not require a receipt for reimbursement, but it's usually better to have more information than required when it comes to reimbursements. More information on receipts can be found in the travel section of the intranet [here](#).

***Do I need to be an authorized driver to rent a car or be reimbursed for parking/driving for school affiliated travel?***

Yes. If you plan on driving, renting a vehicle (please see the Administration team member before you do this), or even being reimbursed for parking for your personal vehicle at the airport, you must be an authorized driver for the department in the Approved Driver Database. You can fill out the online form [here](#), and any questions regarding this process should be directed towards Debbie Beich in Risk Management (608/262-8926). Keep in mind you must renew your application yearly, so it is a good habit to get into at the beginning of the fall semester.

***After I travel, how do I get reimbursed for my personal expenses?***

To be reimbursed, you must initiate an expense report [here](#). For more information on how to ensure you are creating a complete expense report, follow [this link](#). You can also delegate entry authority to an admin depending on what funding you are using. When in doubt feel free to reach out to Mary Pierce who can review your report with you and make edits. To allow her access to your report, you must delegate her entry authority and make her aware of the report. Do not submit your report until she has had a chance to review it. More information on Medical Physics Travel Information is [here](#) on the Intranet.

***Where can I find more about Travel Policies and resources?***

The UW system has a very helpful site which collects all policies, resources, and other pertinent information, and is frequently updated with new policies as they appear. You can find it [here](#).

***Who to ask for help for concerns on research misconduct or harassing and intimidating behavior (HIB)?***

Our department and the University of Wisconsin-Madison takes these issues seriously. If you have concerns regarding research misconduct or HIB, 1st consider talking to your advisor. If you feel uncomfortable doing that, reach out to someone in your

mentoring committee, or the chair of Medical Physics. If you want to talk to someone outside Medical Physics, the Dean of Students Office is prepared to help. In this handbook, page 2 ("Professional Conduct and Ethical Behavior Statement") has links to UW-Madison guidelines for reporting research misconduct and in page 14 (Personal Safety, Harassment Discrimination and Diversity/Inclusion) for reporting HIB and to the Dean of Students Office.



## Who to Ask For Help?

**Educational Programs Coordinator:** Applications, Graduate School policies and procedures, all warrant information, degree progression & requirements, graduation information, T32 training grant administration, timetable and course planning information, course evaluations, syllabi, alumni information

**Graduate Committee Chair or Program Director (Department Chair):** Specific information regarding policies and procedures involving Oral Qualifier Exam, Prelim Exam, Defense Exam, degree requirements, etc.

**Administrative Team/Staff Support:** Travel, shipping, cubicle assignments, after-hours access, keys, conference related purchasing, radiation badges and rings, social media, room reservations, office supplies, miscellaneous questions.

**Assistant to the Chair:** Schedule appointments with the Department Chair, scheduling rooms, student status letters to attend professional meetings, etc.

**Faculty Advisor:** Curriculum advising, research, career decisions, official approvals for academic actions, information about the discipline of Medical Physics, student desks/office space, etc.

**Research Administrator:** Faculty and student grant notifications, administration and support

**Grants Administration:** Post-award administration, budget and other support

**Communications:** Program promotion, recognition of your accomplishments, awards, milestones, social media

**Human Resources Specialist:** HIPAA compliance documentation, I-9, VISAs, RA/TA/PA, trainee, fellowship appointment set-up

**Payroll & Benefits Specialist:** Insurance information, payroll

**Financial Specialists:** Fiscal activities, purchasing lab related supplies

**Academic/diversity/inclusion concerns/appeals:** Department Administrator

## UW-Madison Alumni Association

The University of Wisconsin – Madison Alumni Association has initiated a Career Connections program, which offers alumni and students the chance to meet established professionals from whom they can obtain valuable career information. It is not a job placement or recruiting service, but rather an opportunity for students to network and conduct informal interviews. Students who use the program will be connected to alumni who work in the occupational field they wish to pursue. Contacts can range from a brief phone conversation to joining someone for a “day on the job.” The service also offers workshops and seminars. Contact the Wisconsin Alumni Association, 608-262-2551 or <http://www.uwalumni.com> for more information.

The Association also offers an economical short-term health insurance plan for graduating students.



# Campus Resources

## ***The Division of Information Technology (DoIT)***

DoIT coordinates instructional and research computing facilities, computer education, and electronic mail accounts for the entire University community. DoIT operates computer labs all over the campus, but its main site is at 1210 W. Dayton Street, where there are terminals, printers, graphics output devices, other peripherals, and computing resources as well as consultants. DoIT regularly introduces its services by providing short, non-credit courses, and students can also take advantage of free peer training classes. The Microcomputer Information Center (MIC) houses a variety of microcomputers, printers, other peripherals, and software. MIC staff are available for consultation on hardware and software options and provide information about discounts available to students, user groups, bulletin boards, and other information services. Journals and other literature are available. MIC services are generally free. The microcomputer lab rents time on microcomputers, letter-quality printers, and laser printers. A Printing Services Card is required for computer printing. For more information, pick up the DoIT resource catalog, which is published every semester. <http://www.doit.wisc.edu>

## ***Email***

Graduate students are assigned an official email account so they can communicate electronically with students, staff, and professors on campus and colleagues at universities and corporations in 120 countries. This official 'wisc.edu' email address should be used for all official university and department business activities. Email from this address should not be forwarded automatically to other outside email accounts. Students are responsible for all official department and University information sent to their @wisc.edu e-mail address.

## ***MyUW***

MyUW is the indispensable campus resource for online information and access to essential communication tools – from e-mail and calendaring to course enrollment to billing to easily accessible information for students and advisors.

## ***Writing Center***

The **UW Writing Center** provides free, non-credit instruction and individual consultation on all types of writing assignments, from simple papers to doctoral dissertations. Many students have found the Center's staff to be quite helpful for writing research papers and constructing dissertation proposals.

Students may make an individual appointment for consultation with an experienced instructor who can help organize ideas, point out possible problems in a draft, or offer advice about revision. Students who need intensive work on their writing can obtain help by scheduling ongoing meetings with an instructor in order to work in a sustained way.

The Center's non-credit courses review basic principles of writing and introduce common forms of academic writing. Course topics include research papers, essay exams, grammar review, review of academic writing for returning adult students, improving style, book reviews, graduate research proposals, critiques of research articles, and more.

The Center is located at 6171 Helen C. White Hall; the phone number is 263-1992. Detailed information and on-line registration are available via the Center's web site at <http://writing.wisc.edu> . You can contact them by e-mail at [writing@wisc.edu](mailto:writing@wisc.edu).

## ***Library***

UW-Madison has more than 100 libraries across campus. Library tours are available upon request. To schedule a tour, contact the individual library. Phone and e-mail contact information for campus libraries is available at <http://www.library.wisc.edu/libraries>. For a list of Workshops from the Universities Libraries', visit: a specific library, click on features.

## ***Ebling Library***

Most Medical Physics faculty and students use the UW Health Sciences Ebling Library. The address is 750 Highland Avenue, and their phone number is 262-2020. You can access the Ebling Library at <http://ebling.library.wisc.edu/>.

## ***Electronic Library***

Through the **Electronic Library**, it is easy to search more than 5.5 million holdings in the campus libraries and more than 30 million journal citations. You can connect to the Electronic Library from your office or home to find out what's on the shelves, to use e-mail reference, or to renew and recall materials. The Electronic Library can be accessed at <http://www.library.wisc.edu>.

## ***Library Express***

The **Library Express** document delivery and interlibrary loan service supports the instructional, research and scholarly activities of UW-Madison faculty, staff and students. You can access it at <http://www.library.wisc.edu/delivery>. Items relating to personal interests or for entertainment purposes should be requested through the Madison Public Library (LINKCat Catalog - Web version or Madison Public Library Interlibrary Loan Service) or UW System Borrowing service. Use Library Express to obtain books and articles not owned by UW-Madison libraries or to request campus document delivery service. Use the Electronic Journal List to access 8,000 + full-text electronic journals, magazines, newsletters, and newspapers. Use MadCat or MadCat's UW System Borrowing service to request books from UW Madison or the other UW campuses.

## ***Publication Submissions***

The best way to do is to use BuckySubmit for publications. <https://pas.wisc.edu/buckysubmit/> Contact Ryan Schryver [ryan.schryver@wisc.edu](mailto:ryan.schryver@wisc.edu) to help with this process and recommend any tips. BuckySubmit is a one-stop service that submits researchers' papers to their funders' institutional repositories. It's a fast and easy way for federal and private foundation awardees to meet public access to publications compliance rules.

## ***Transportation***

You can find information on transportation throughout campus, including bus service, bicycle arrangements, and parking facilities, at <http://transportation.wisc.edu/>. Commuting by bike is a simple way to cut down on campus congestion and help preserve the environment. Thousands of students, staff, and faculty commute by bicycle to UW-Madison. Plenty of bicycle racks spaces are available near every campus building for parking and securing.

The Transportation Services Office, 124 WARF Office Building, 263-6666, sells visitor parking permits and bus passes. Parking and transportation **maps and bus schedules** also are available at satellite offices in the American Family Children's Hospital (608) 263-4007. Visitors have a better chance of obtaining space if parking is reserved in advance. All areas have a fee. See <http://transportation.wisc.edu/> for a complete list of available parking options.

## ***Madison Metro***

[Madison Metro bus service](#) is convenient and stops outside the Health Sciences Learning Center. The "Route 80" bus is free on campus. Madison Metro buses require the use of the bus pass which is free of charge to students. In addition, many students and faculty use bicycles or walk to get to different campus locations.

Convenient bus service is provided throughout the UW campus and the city of Madison. Madison Metro provides daily bus service throughout the city and to some suburbs. About 90 percent of the citizens of Madison are within a quarter of a mile of a bus route. Student bus passes are funded through ASM via segregated student fees and distributed through ASM.

The free campus **'80' bus route** serves WIMR, the UW Hospitals, Eagle Heights, parking lot 60, and the Clinical Science Center on the west side of campus, the Medical Sciences building, the Wisconsin Institutes for Discovery/Morgridge Center, the Engineering campus and the Union South in the middle of campus, and Memorial Union and State Street on the east. The route runs from 6:16 a.m. – 1:55 a.m. weekdays, with a peak frequency of 7-8 minutes. On the weekends, the route begins at 7:55 a.m. and runs every 45 minutes. For more detailed bus route information check out the bus website (listed above).

Passengers may transfer from campus buses to Madison Metro buses along University, Johnson Street, and Park Street. Most buses stop in the campus area. For schedule and route information, call 608/266-4466 or visit the Madison Metro Transit System website at <http://www.cityofmadison.com/metro>.

### ***University Health Services (UHS)***

Clinical Services, at 333 East Campus Mall, 265-5600, provides outpatient primary medical care, nursing, and prevention services, including general medicine, women's clinic, sexually transmitted disease evaluation and treatment, allergy, and dermatology services.

Counseling and Consultation Services, at 333 East Campus Mall, 265-5600, helps students who are experiencing personal stress, career concerns, family or interpersonal conflict, general anxiety, depression, or other psychological concerns. The staff also provides an after-hours crisis response service at 265-6565. More information about UHS can be found at its website, <http://www.uhs.wisc.edu>.

### ***Graduate School***

The Graduate School website provides an overview of all programs at UW-Madison that offer graduate degrees, graduate minors, and certificates. It contains general rules and regulations for each program, including policies for admission, course work, and criteria governing satisfactory progress. The most current version of the catalog can be found on the web at <http://www.wisc.edu/grad/catalog>.

The *Graduate School Academic Guidelines* provides the “nuts and bolts,” in-depth information about all policies and procedures of the Graduate School. The online version on the Graduate School Web site is the official document of record. The Graduate School Office of Academic Services and Fellowship Administration developed this to help answer questions about Graduate School academic and administrative policies and procedures. The Graduate School also has information on “Completing Your Degree”.

Informational websites for admitted graduate students, current graduate students and for all graduate students can be found at: <https://grad.wisc.edu/> and <https://grad.wisc.edu/studentlife/>.

## Campus Web Sites

Wisconsin Welcome Events: <http://www.newstudent.wisc.edu/>  
<https://grad.wisc.edu/new-students/>

### Helpful University Web Sites:

Graduate School Homepage: <http://grad.wisc.edu>  
Division of Student Life: <https://students.wisc.edu>  
Office of Student Financial Services: <http://finaid.wisc.edu>  
Registrar's Office: <http://registrar.wisc.edu>  
University of Wisconsin: <http://www.wisc.edu>  
Campus Map: <http://www.map.wisc.edu>

### Events Calendars:

Athletic Department: <http://www.uwbadgers.com>  
Wisconsin Week: <http://today.wisc.edu>  
Wisconsin Union: <https://union.wisc.edu/>

### Museums and Galleries:

Chazen Museum of Art: <https://www.chazen.wisc.edu/>  
Geology Museum: <http://geoscience.wisc.edu/museum/>  
Department of Art: <https://art.wisc.edu>

7th floor, Humanities Building, 455 N. Park St.

Open during normal building hours. 608-262-1660

The Department of Art exhibits undergraduate and graduate student works in the gallery on the seventh floor of the Humanities Building.

### Memorial Union Galleries:

800 Langdon St. Open normal building hours. 608-262-1660

The Memorial Union offers a number of different galleries featuring diverse exhibits throughout the year. Check the campus events calendar (<http://www.today.wisc.edu>) under Ongoing Exhibits for a listing of current shows.

### Performing Arts:

Wisconsin Union Theater: <https://union.wisc.edu>  
School of Music Concerts: <https://www.music.wisc.edu>

### Athletic Events:

Athletic Ticket Office: <http://www.uwbadgers.com>  
The Kohl Center: [http://www.uwbadgers.com/facilities/kohl\\_center.html](http://www.uwbadgers.com/facilities/kohl_center.html)  
The Kohl Center is the home of Badger basketball and hockey. The facility is also a venue for state tournaments, concerts, family shows and university events. The Kohl Center is located at 601 W. Dayton Street, and the phone number is 608/263-5645 (KOHL)

### Campus Natural Areas:

Howard Temin Lakeshore Path: The Lakeshore Path runs for two miles along Lake Mendota on the northern edge of the campus. Beginning near the Memorial Union and ending at picnic point, the path is a popular destination for bicyclists, joggers and walkers.

UW Arboretum: <https://arboretum.wisc.edu/visit/>

A 1,240-acre outdoor ecological laboratory for research and instruction, provides examples of major plant communities in the Midwest.

Allen Centennial Gardens: <https://allencentennialgarden.org/>

At the corner of Observatory and Babcock Drives includes English,

Victorian and New American Gardens.

## About The City

### ***Housing***

The Campus and Visitor Relations website is very helpful. The CVR customer service desk is located at 329 Union South, 1308 W. Dayton Street. You can reach them by phone at 608/263-2400. The e-mail address is [askbucky@uwmad.wisc.edu](mailto:askbucky@uwmad.wisc.edu) and the URL is <http://info.wisc.edu>.

On-Campus Housing: The UW-Madison Division of University Housing offers accommodations for the academic year for single graduate men and women in three locations: there are single and double rooms in the Davis House and Merit House, and one- and two-bedroom furnished apartments on Harvey Street. The University also maintains student family housing for the entire year at Eagle Heights (one-, two-, and three-bedroom unfurnished apartments) for students with a spouse, domestic partner, or child. Many of these accommodations (especially family housing) have long waiting lists or early application deadlines, so students must consider housing options well in advance of the time they will need them. Applications for graduate student residence halls are accepted as of October 1<sup>st</sup> for the following academic year. For students beginning their studies in the spring, applications are accepted as of June 1<sup>st</sup>.

Off-campus Housing: Many types of off-campus housing are available, including rooms, efficiencies, co-ops, apartments, and houses. The Campus Information, Assistance & Orientation office maintains a current list of vacancies. Other places to look include the city and campus newspapers and the bulletin boards in the lobbies of both student unions. Most property owners in the campus area require a one-year lease. Monthly rent prices in Madison vary widely depending on location, whether or not utilities are included, the size and amenities of the unit, and so on. Check with the following sources for more information:

Madison Community Co-ops  
1202 Williamson Street, Suite C.  
Madison, WI 53703  
608/251-2667, <http://madisoncommunity.coop/>

Tenant Resource Center  
1202 Williamson Street, Suite A  
Madison, WI 53703  
608/257-0006, <http://tenantresourcecenter.org>

There are also free publications available at news-stands, grocery stores, libraries, etc.:

Start Renting: <http://www.startrenting.com>  
Apartments for Rent Magazine: <http://www.forrent.com>  
Campus Area Housing: <http://campusareahousing.wisc.edu>  
Madison Campus & Down Town Living: <http://www.CDLiving.com>



## ***Other Sources of Information***

The Greater Madison Chamber of Commerce, 615 E. Washington Avenue, phone 608/256-8348, <http://greatermadisonchamber.com/>, has information on recreation, shopping, restaurants, and hotels. City information and events of interest are listed in the free weekly newspaper, *Isthmus*, and the two daily newspapers, the *Wisconsin State Journal* and *The Capital Times*. Other useful sources of local information are Wisconsin Public Radio (WHA 99.7 AM or WERN 88.7 FM), operated on the UW campus, and community-sponsored "Back Porch Radio" (WORT 89.9 FM).

## ***Local Web Sites***

City of Madison: <http://www.cityofmadison.com>

Greater Madison Convention & Visitors Bureau: <http://www.visitmadison.com>

Weather: <http://www.channel3000.com/weather>

Madison Metro Transit System: <http://www.cityofmadison.com/metro>

Dane County: <http://www.countyofdane.com/>

State of Wisconsin: <http://www.wisconsin.gov/Pages/home.aspx>

Wisconsin State Journal newspaper: <http://host.madison.com>