UTHealth
The University of Texas
Health Science Center at Houston

THE UNIVERSITY OF TEXAS
MD Anderson
Cancer Center

Graduate School of Biomedical Sciences

GRADUATE PROGRAM IN MEDICAL PHYSICS

STUDENT HANDBOOK

SEPTEMBER 11, 2017

CONTENTS

MEDICAL PHYSICS PROGRAM CONTACTS

Program Director — **Richard E. Wendt III, Ph.D.**
CPB5.3335
(713)745-3250
rwendt@mdanderson.org
Unit 1352, Department of Imaging Physics

Deputy Program Director — **Rebecca Howell, Ph.D.**
ERD1.208
(713)745-8762
rhowell@mdanderson.org
Unit 0605, Department of Radiation Physics

Admissions Director — **Laurence Court, Ph.D.**
FCT8.6014
(713)563-2546
lecourt@mdanderson.org
Unit 1420, Department of Radiation Physics

Program Manager — **Melissa Tovar**
FCT14.5032
(713)563-2548
mtovar@mdanderson.org
Unit 1472, Department of Imaging Physics

Program Co-ordinator — **Frances Quintana**
FCT14.5034
(713)794-5575
fhquintana@mdanderson.org
Unit 1472, Department of Imaging Physics

Most of the medical physics classes are taught in the Pickens Tower (also known as the Faculty Center Tower or FCT and not to be confused with the building immediately to the north of it, the Faculty Center or FC), in rooms FCT14.5059, FCT8.6091 and FCT8.6007, and in the Duncan Building (also called the Cancer Prevention Building or CPB), in room CPB5.3312. A few are taught in the Basic Science Research Building, in room S3.8371 near the Graduate School offices.

There is a lot of information related to the Graduate School and the Program on the Internet.

Medical Physics Program Course Support Web Site: http://www.uthgsbsmedphys.org/. Your instructor will give you the password to the restricted access areas.

Medical Physics Program Web site: https://gsbs.uth.edu/medphys.

GSBS Web site: https://gsbs.uth.edu/

MD Anderson Department of Radiation Physics: https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/radiation-physics.html

MD Anderson Department of Imaging Physics: https://www.mdanderson.org/research/departments-labs-institutes/departments-divisions/imaging-physics.html

GRADUATE SCHOOL OF BIOMEDICAL SCIENCES

The most up-to-date contact information for the GSBS administration is on the GSBS Web site at: https://gsbs.uth.edu/home/contact-us/staff-directory.htm.

The deans**, Dr. Michelle Barton** and **Dr. Michael Blackburn**, have the overall responsibility for leading the graduate school.

Dr. William Mattox and **Brenda Gaughan** are the first stop for most academic matters affecting students. When you see references to the Office of Academic Affairs, it means Dr. Mattox and Brenda. **Lourdes (Bunny) Perez** is the GSBS liaison to the registrar and handles matters such as grades and records in the GSBS. **Dr. Mattox** and **Joy Lademora** oversee scholarships and fellowships. **Dr. Eric Swindell** and Joy handle curriculum matters.

Karen Weinberg takes care of admissions and the orientation of new students. **Dr. Andrew Bean and Dr. Marenda Pham** help with admissions, promote diversity and support career development among many duties.

Lily D'Agostino manages the front desk. **A. Michael Valladolid** manages information technology with assistance from **Michael Orlando**.

Elisabet Lau assists GSBS-funded students with health benefits, payroll and other administrative matters related to financial support. **Jeannette McGee** does the same for MD Anderson-funded students.

These are the people at the graduate school with whom students interact most frequently, but there are others as well, without whom the GSBS could not function. You will get to know them too as you become more familiar with the school.

There is a wealth of information that is relevant to students on this page: https://gsbs.uth.edu/academics/policies/. Medical physics students are strongly encouraged to read all of the documents that are linked to from this page. If information in this handbook contradicts what is on the GSBS Web site, the GSBS is the more authoritative source and the discrepancy should be brought to the program's attention for correction or explanation.

There is a repository of GSBS forms here: https://gsbs.uth.edu/academics/forms/. Students should take the responsibility to bring the required forms to their committee meetings and examinations. It is prudent to review the forms in advance and to complete as much of them as possible prior to the meeting, such as typing in the committee members' names.

ADMINISTRATIVE INFORMATION

The Program Manager for Educational Programs, Melissa Tovar, mtovar@mdanderson.org, FCT14.5032, 713-563-2548, provides high level administrative support to medical physics graduate students who are either first-year students or subsequent-year students who are being supervised by MD Anderson faculty. The Program Co-ordinator, Frances Quintana, FCT14.5034, 713-794-5575, fhquintana@mdanderson.org, assists the Program Manager in running the Program Office. The Program Office is responsible for maintaining student personnel files, issuing keys and ensuring that students are in compliance with institutional policies and procedures. All forms mentioned in this document may be picked up from the Program Office.

Most students rely upon the support staff members (e.g., the Administrative Assistants) who support their supervisors for matters such as scheduling meeting rooms and times. First year students are supported by the Program Office.

Please note that many rules, policies and procedures differ depending on whether a student is paid by the GSBS or by MD Anderson. As with any large bureaucracy, the consequences of getting things wrong can be substantial and difficult to repair. **When in doubt, don't guess; ask Melissa**.

TIME OFF REQUESTS

If a student needs to take time away for any reason, he or she should contact the Program Office. In most cases, the absence may be documented by filling out a simple form. The time away policies differ for GSBS-funded students and for MD Anderson-funded students. The Program Office will ensure that each student receives the correct advice for his or her needs and circumstances.

PAYCHECKS

Students are encouraged to sign up for direct deposit of their paychecks during orientation. Students are paid twice a month:

- GSBS-Funded Students – on the 1st and 16th of each month, pick-up at the Graduate School if not directly deposited
- MD Anderson-Funded Students – on the 5th and 20th of each month.

BADGES, KEYS AND PASSWORDS

The Program Office is responsible for distributing, collecting and reporting the loss or theft of:

- Radiation safety badges (i.e., dosimeters)
- Keys to office doors and furniture
- GSBS and MD Anderson ID badges

Most of the non-specialized computer systems that you will use at MD Anderson, including the approved cloud storage provider, Box.com, rely upon an Active Directory server that authenticates users by a single username, which will be assigned to you during the week of orientation. The password for that account may be changed using a feature call Password Self-Service. It must be changed at least quarterly. The accounts that are needed to access specialized computing systems that do not use Active Directory are managed in different ways that you will discover from faculty members or fellow students if your need to use them arises.

MAIL AND COMMUNICATIONS

Students have assigned mail boxes located in their office areas. All phone messages, supervisor communications and mail are placed in these boxes or transmitted via Email. Checking both Email and the physical mailbox once a day would be prudent.

Students should keep the Program Office apprised of any changes to their home residence addresses, home or cellular phone numbers and personal Email addresses, as well as student office room numbers and extensions. Students are encouraged to provide their cellular phone numbers also. Situations do occasionally arise in which a student must be located and contacted quickly, and the accuracy of this information becomes essential. In the the disruption that was caused by Hurricane Harvey in 2017, the importance of being able to get in touch with students whose whereabouts and well-being were initially unknown was demonstrated.

GSBS students are given Email addresses in the UTHealth domain, uth.tmc.edu. The GSBS uses these for official communication. Although the GSBS maintains a list of students' MD Anderson addresses and uses them for some purposes, the really important communications regarding registration, bursar's matters, benefits and insurance are sent only to students' uth.tmc.edu addresses. .Students are strongly advised to check this account regularly, as they will be held responsible for having read in a timely manner the messages that are sent only to that address. More information on the UTHealth accounts and other information technology matters (including how to get cheap software) may be found here: https://gsbs.uth.edu/about/information-technology/resources/. In particular, note how to activate the UTHealth account and how to configure Email clients for more than one Email account.

Placing a long distance call requires a long distance authorization code. Ask your supervisor for permission to use his or her authorization code, and then your supervisor's administrative assistant can place the call for you.

TRAVEL REQUESTS AND REIMBURSEMENT

In order to travel on official business related to your education or your project work (e.g., to visit another lab or to present at a regional or national meeting), a travel authorization request must be completed at least two weeks in advance of the date of travel. The Program Manager will assign a support staff member to work with you on the completion of all travel arrangements. Please note:

- Follow the Rules – Certain aspects of traveling, most particularly air travel, must be booked through the MD Anderson travel department. MD Anderson **will not** reimburse travelers who reserve and pay for air travel themselves. Do not even think about it, no matter how good a deal you have found online. Really, do not. There is no reasoning against or exception made to this policy. Seek the assistance of the assigned support staff to make sure that all travel arrangements are made correctly.
- Confirm Travel Funding before Committing – The student is responsible for arranging with his or her supervisor how a trip will be funded before committing to the trip (such as by submitting an abstract to a conference). If a student is presenting papers, posters, or works-in-progress at national meetings, travel awards from the Graduate School are available via an application process, but these rarely cover all of the expenses of such a trip. The GSBS encourages students to apply for travel awards even before the submitted presentation has been accepted. The application form is on the GSBS Web site at https://gsbs.uth.edu/academics/forms/.
- During and after Travel – Obtain itemized receipts for meals, hotels, taxi fares, shuttles, and other expenses and save them. If two students are splitting the cost of a room, have the hotel provide each student with an original bill for his or her portion of the hotel charges. Hotel bills must show a zero balance (i.e., the payment should be applied before the bill is printed). Alcohol will not be reimbursed. There is no per diem allocation; only actual expenses can be reimbursed. Other limits that depend on the funding source apply, and the support staff member can explain these intricacies. Not following these rules will cause substantial and possibly irremediable problems with reimbursement. Within three days of returning from the trip, provide the support staff member with all receipts and assist him or her in completing the travel reimbursement process.

Once students are set up in the M. D. Anderson Human Resources system, they should log into Concur, which is a travel management application and add Melissa Tovar and Frances Quintana to their profiles. This will enable Melissa and Frances to handle the logistics of students' travel efficiently. Click the stylized silhouette, choose Profile Settings and then Expense Delegates. Add Melissa and Frances and check the boxes for "Can Prepare", "Can

Book Travel", "Can Submit Reports" "Can Submit Requests", and "Can Review Receipts." Do not wait until the last minute before a trip to do this.

LABORATORY COATS

The Program Office provides each student with one lab coat. Students are responsible for the laundering of their lab coats, which must be kept clean and neat.

MEDICAL PHYSICS LIBRARY

The Department of Radiation Physics maintains a departmental library on the 8th floor of Pickens Academic Tower, FCT8.6053. The library is open on weekdays from 8:00 am to 5:00 pm. All books should be checked out and in through Linda Stall, Melvina Hackett or Catrice Nelson, 713-563-8816, cnelson5@mdanderson.org, whose desk is right down the hall from the library.

The Department of Imaging Physics maintains a departmental library in the Duncan Cancer Prevention Building just outside of the Imaging Physics Conference Room, CPB5.3374. The library is open from 8:00 am to 4:00 pm. All books and journals should be checked out and in through Ashley Reyes, 713-792-5772, CPB5.3301, areyes7@mdanderson.org.

STUDENT COMPUTING RESOURCES

Program students will have the use of a desktop computer running Windows 7 with access to the Internet and shared printers. Microsoft Office, including Word, Excel, PowerPoint and Access, is among the software that is provided on these computers. Additional site-licensed software for institutional computers may be requested through the Preferred Software mechanism: http://inside.mdanderson.org/departments/it-services/prefsoft.html.

Treatment planning computer inquiries should be addressed to Linda Stall, Operations Manager in Radiation Physics, by Email lstall@mdanderson.org. Please copy Frances Quintana, fhquintana@mdanderson.org, on your request.

Desktop computer hardware inquiries should be addressed to 4-INFO via Email, 4info@mdanderson.org or by calling extension 4-4636 (4-INFO).

Software inquiries should be addressed to the Program Manager. Students who need **ClinicStation, OneConnect or VPN access** should apply through the ISARP mechanism after discussing their need with their advisors or, for first year students, with the Program Director.

The program has several notebook computers that students may borrow for short term use. These computers can be checked out for committee meetings, presentations, and gathering data while working on research in clinical areas for later transfer to desktop computers. Please see Frances Quintana to check one out.

The University of Texas has a high performance computing center that is located in Austin: https://www.tacc.utexas.edu/. If you need to use this resource for your research, typically your advisor will know how to get you set up.

Computing in the cloud has become popular, but storing data remotely must be done correctly in a medical environment. The inappropriate disclosure of protected health information, whether it be intentional or accidental, is dealt with very harshly by the federal government. MD Anderson provides accounts on Box.com, which is a cloud storage provider that has agreed to safeguard our confidential information, unlike most other cloud storage services. Any student with an MD Anderson Email account can use Box.com. Patient data and research data must not be stored remotely except on Box.com. To get started, go to https://mdacc.box.com.

MD Anderson regularly evaluates other remote storage services, but at present, only Box.com is approved for the storage of confidential information. Some unapproved services have actually been found to be malicious. Do not be surprised to find your access to other cloud storage blocked. Do not place confidential information, especially patient data, on any remote storage service that is not approved. This includes putting patient information, such as a spreadsheet of research data, in an Email message that is sent outside of MD Anderson. If an issue arises, such as external collaborators who insist on using an unapproved service, discuss the situation with your advisor and the Program Director. MD Anderson monitors the flows of information into and out of the institution in real time, and it takes violations of this policy very seriously.

Local storage of confidential data must be on encrypted media. Do not store patient data on USB "thumb drives" that are not encrypted. These devices are easy to misplace. Anyone who loses an unencrypted device that contains protected health information puts both MD Anderson and him- or herself at grave risk of punishment.

Please take data security and patient privacy seriously. These are real concerns, and we have in the past had students get in trouble with the institution for not following the rules.

COPYRIGHTED MATERIALS

The proper use of copyrighted materials, including photocopying, scanning and incorporation into other works, is governed by federal law and by institutional policies. The MD Anderson policy on copyrighted materials lays out a number of issues of which students should be aware so that they properly respect the rights of others.

AAPM DUES

All Medical Physics Program students are expected to join the American Association of Physicists in Medicine. The Medical Physics Program will reimburse students for the initiation fee and the annual dues for student membership in the AAPM. In order to receive reimbursement, please provide the Program Manager with proof of payment.

CHECKING-OUT OF YOUR DEPARTMENT AND/OR MD ANDERSON

When you are ready to leave your department, e.g., when you graduate, check with the Program Office to find out what you need to do. Students must notify the Program Office at (713)563-2548 as soon as possible of their last working day at MD Anderson. The Program Office will then coordinate checking out with the GSBS and with Trainee & Alumni Affairs. This will be done with Jeanette McGee, Senior Academic Coordinator at AVA-Trainee (GSBS Office). Please send her Email at jmcgee@mdanderson.org to set up a time to check out. Her office is located in Room S3.8423 in the BSRB. All departing students will receive a clearance form to be completed and signed by the departments listed on the form, e.g. medical library, payroll, etc. The checkout process is complete only after a student has been cleared by all departments that are required on the clearance form, and has returned the completed clearance form and ID badge to the Medical Physics Program Office.

http://inside.mdanderson.org/education/medical-scientific-education/trainee-check-out-procedure.pdf

CHECKING-OUT WITH THE MEDICAL PHYSICS PROGRAM OFFICE

After you have completed your degree, please give the Program Manager your forwarding information, including your next position, Email address and mailing address. Among other reasons for asking for this information, the Program's accreditation by CAMPEP requires that we provide them with an annual summary of the success and future plans of our graduates.

A member of the Program Office will be the last person to sign your TAA exit paperwork at which time your badge and keys will be collected. The exit paperwork will be forwarded to TAA on your behalf.

WIDESPREAD EMERGENCIES

Houston is a city on a coastal plain that is subject to flooding during heavy rains, tropical storms and hurricanes. Usually, there is enough warning before a hurricane arrives that researchers can secure their experiments and backup their data, but severe flooding can sometimes occur with little or no advanced notice and leave people isolated if not in physical danger for hours to days.

In such emergencies, the Program's parent institutions, UTHealth and MD Anderson, must give their highest priority to the patients and a pared-down staff (which is called the Ride-Out Team at MD Anderson) that remain onsite. Students should monitor the institutions' emergency status at https://emergencyalert.mdanderson.org/, https://uthealthemergency.org/, and https://gsbs.uth.edu/academics/policies/emergency-weather-information.htm. They should consider signing up for emergency alerts that are delivered via Email or text messages. Students should not come to campus during such emergencies unless they are specifically authorized to do so, even once the streets become passable again. The institutions' resources, including food, water, sewer capacity and electricity from emergency generators might be limited and needed for essential operations such as patient care and the protection and repair of the physical plant.

Students should heed the advice in the news media prior to hurricanes regarding storm preparation and evacuation. The institutions cannot act as a safe haven and will not allow "non-essential" personnel, including students, into their facilities during an emergency. To be blunt, students will be on their own regarding their personal safety, as will be the rest of Houston.

After an emergency has passed, students might find themselves needing to move and to replace possessions, perhaps even including an automobile. The Graduate School has an interest-free loan mechanism to help students bounce back. In some past incidents, the parent institutions have also had means to help, such as fund drives, that have included students among their beneficiaries.

Students who are living in a rental property should note that renter's insurance typically does not include flood coverage, but that insurance against flooding can be purchased separately. Historically, the Program has had more students' homes affected by flooding than by fire or burglary. When choosing a place to live, one might consider the advantages of living higher than the ground floor in a multi-story building.

SPECIAL NEED REQUIRING AN ACCOMMODATION

Students who have a special need can formally request an accommodation through the GSBS Office of Academic Affairs. If a student discusses a situation informally with the Program Manager or the Program Director, they will try their best to help, which might necessitate informing the Office of Academic Affairs of the student's possible need. More information may be found here: http://www.uth.edu/hoop/policy.htm?id=1448050 and here: http://edmpids1.mdanderson.edu/apps/ipp/published/ipp/ADM0286.pdf.

REPORTING SEXUAL HARASSMENT

While we hope that our students are never subjected to sexual harassment, should it occur, they may report such mistreatment to someone in authority. Please note that it is important to mention the nature of the report at the onset of the conversation and to request confidentiality immediately if that is desired. More information may be found here: http://www.uth.edu/hoop/policy.htm?id=1447966 and here: http://edmpids1.mdanderson.edu/apps/ipp/published/ipp/ADM0285.pdf.

PROGRAM EVENTS AND ACTIVITIES

MEDICAL PHYSICS PROGRAM ORIENTATION

The incoming Medical Physics Program students participate in portions of the week-long GSBS orientation. A special program consisting of an introduction to computing; laboratory, linac, MRI and radiation safety training; an introduction to the research areas in medical physics; and an administrative orientation is presented to the medical physics matriculants.

STUDENT LUNCHEONS

The Medical Physics Program Student Council holds a couple of luncheon meetings each year. The purpose of these luncheons is to provide a venue for students to bring up issues or concerns as needed.

LUNCH WITH PROGRAM DIRECTOR AND DEPUTY DIRECTOR

Twice yearly, the Program Director and Deputy Program Director will meet with the student body over lunch in order to bring students up to date on recent GSBS or program changes and to discuss issues or concerns.

SPRING STUDENT/FACULTY MEETING

Each spring, the Medical Physics Program students and faculty meet together to discuss business of mutual interest. A recent example was the presentation to the faculty of the report of the ad hoc Student Curriculum Committee.

THESIS DEFENSE SEMINARS

All Medical Physics students are strongly encouraged to attend the M.S. and Ph.D. defense seminars of all Medical Physics students. This is a chance to support fellow classmates and to observe how to present and defend a thesis or dissertation successfully.

DEPARTMENTAL SEMINARS

The Departments of Imaging Physics and Radiation Physics host seminars throughout the year. Internationally recognized scientists come to speak and to present their latest results. All Medical Physics program students are very strongly encouraged to attend these seminars. Either department might require that its students attend a particular event. Students will be notified when their attendance is mandatory.

DEPARTMENTS OF IMAGING PHYSICS AND RADIATION PHYSICS ALUMNI EVENT

During the Annual Meeting of the American Association of Physicists in Medicine, the Departments of Imaging Physics and Radiation Physics host an event for all alumni, current program students, faculty and staff. This is an opportunity to participate in the continuity of the program and to make professional contacts with alumni and friends of the program.

PROGRAM SEMINARS AND EVENTS

The Medical Physics Summer Trainee Research Seminar is a summer-long series of research presentations by students, post-doctoral fellows and residents in medical physics. All medical physics graduate students are expected to attend each week and to present when called upon to do so.

STUDENT RESEARCH RETREAT

The student body organizes a retreat each year at which the students discuss their research under the guidance of a distinguished medical physicist from another institution. The program faculty members do not participate in this event by design; it is by students and for students.

ADVICE FOR BOTH S.M.S. AND PH.D. STUDENTS

WAIVING A REQUIRED COURSE

Students who wish to waive a required course in medical physics may do so with the approval of both their advisor and the appropriate course coordinator, but only if the course coordinator determines that coursework that the student had taken previously is equivalent to the medical physics course to be waived. The program has a form for this purpose, which may be obtained from the Program Office. The Program Steering Committee reviews the waivers and ratifies them.

Note that a waiver does not confer transfer credits and thus extra electives (or more hours of research) might be required to fulfill the GSBS requirement regarding the minimum number of hours for the degree.

COMMITTEE MEETINGS

All GSBS students are required to meet with their advisory committees at least twice a year, usually at six-month intervals. However, the program strongly encourages more frequent meetings. A detailed description of the different committee meetings, how to set them up, how to prepare, what to bring, what to expect, etc. is in the subsequent "Committees" section (page 32).

All medical physics students should form their Advisory Committees no later than the summer semester of their first year. The purpose of the first advisory committee meeting is to meet everyone, discuss coursework, and get feedback on your experimental approaches, interpretations, and goals. Do not delay setting up the first Advisory Committee meeting. The student need not present extensive results at this first meeting. The goal of the first meeting is to get advice that will help the student to plan his or her work.

THESES AND DISSERTATIONS

The thesis for the master's degrees and the dissertation for the Ph.D. degree are extensive reports of a student's research work. They typically include the traditional elements of a scientific manuscript: the background of the project, a statement of the hypothesis and specific aims of the work, the materials and methods that were employed, the results that were discovered or measured, the significance and interpretation of those results and the conclusion as to the validity of the hypothesis. However, they include much more detail and information than is possible to fit into a journal article. It is not uncommon also to discuss how the work might be carried further in the future. These future directions could be a valuable inspiration to more junior students who are seeking a research topic. The GSBS publishes theses and dissertations online: http://digitalcommons.library.tmc.edu/utgsbs_dissertations/.

The version of the thesis or dissertation that the student will defend must be prepared more than two weeks prior to the defense so that the student's committee can approve it at least two weeks in advance as required by the GSBS. Both an electronic copy and a printed copy are to be submitted to the GSBS with the Request for Defense form, which must be signed by all of the committee members. A copy, preferably electronic, must also be submitted to the Program office at least a day before the defense. That copy will be made available to any faculty member who wishes to read the thesis or dissertation prior to or after the defense.

PUBLICATION

Scholarly work is typically reported to the scientific community in the form of peer-reviewed papers, often after having been presented orally or as a poster at a conference. The paper is typically far shorter and more succinct than a thesis or dissertation. Sometimes several papers may arise from the work that is reported in the thesis or

dissertation. For many students, a manuscript might be written at the completion of each significant intermediate milestone of their projects. These might then be combined and expanded to form much of the thesis or dissertation. The student's advisor and committee will offer guidance as to whether or not this is a suitable strategy and, if it is, how to approach it.

It is important to supporting the reputation of the graduate school for students to include their GSBS affiliation when they write papers and present their work at conferences. One way to do this might be with the words "from the Department of Radiation or Imaging Physics, The University of Texas MD Anderson Cancer Center and Graduate Program in Medical Physics, The University of Texas MD Anderson UTHealth Graduate School of Biomedical Sciences." Students should also consider using the GSBS logo on their posters. See https://gsbs.uth.edu/academics/policies/publication-acknowledgements.htm and https://gsbs.uth.edu/about/gsbs-logo-downloads.htm.

Except for Ph.D. students who join the program after having earned a thesis-based master's degree, one first-authored manuscript that has been submitted to an appropriate peer-reviewed journal is expected at the master's level (be it the S.M.S., M.S. *en route* to the Ph.D., or M.S. bypass by publication). For all Ph.D. students, a first-authored paper that was written after advancing to candidacy is expected at the doctoral level. In many cases, a student's advisor and committee will have a higher expectation. The Graduate School requires that at least one of a student's papers must have been accepted by, and not just submitted to, a journal by the time of the student's Ph.D. defense.

CHANGING ADVISORS

It is rare, but not unheard of, for a student to change advisors. The Graduate School is developing a more formal policy, but right now, should the need arise, the best thing to do is to discuss the matter with the Program Director and the Office of Academic Affairs, who will guide the student (and the two affected faculty members) through the process. Such a change requires the approval of the Academic Standards Committee because it would entail the submission of a revised Advisory Committee form. The student and his or her new advisor will also have to execute the Accountable Mentorship Agreement.

TAKING A LEAVE OF ABSENCE

From the "Policies and Procedures/Leave of Absence" section of the GSBS website (https://gsbs.uth.edu/academics/policies/leave-of-absence.htm, 8/11/16):

> The GSBS allows students to request an official Leave of Absence (LOA) for up to one year. During an official LOA, the student cannot be paid by the advisor or the GSBS as a student, but the student may work at outside employment. Students may request an official LOA from the Office of Academic Affairs at the GSBS. Students must state a date when they will return to the GSBS. If they do not return by that date, and they have not been granted an extension of the LOA, they will be considered to have withdrawn from the GSBS. Students funded by the GSBS are funded for the specified term for continuous enrollment. If a student takes a LOA during the time funded by GSBS, no guarantee can be made that the GSBS-funded time lost during the LOA can be "re-captured" once the student returns to their studies.
>
> Students may return prior to the date indicated on the LOA form. Students returning from LOA do not need to re-enter the Admissions process, but they must notify the Office of Academic Affairs that they are returning at least two to three weeks prior to the semester in which they wish to re-enroll. Extensions of the official LOA for a maximum of up to one additional year may be requested through the Office of Academic Affairs, and must have the approval of a Dean of the Graduate School. Requests for extensions must be submitted at least six weeks before the end of the initial leave.

An official LOA request petition must be filled out by the student and turned into the Office of Academic Affairs. As a part of this form, numerous signatures are required from various offices around the Texas Medical Center, indicating that the appropriate institutional individuals and offices approve the request for a LOA with non-registered status.

Note that any student who fails to register for any semester and who has not been granted an official leave of absence or been approved as a non-registered candidate for a degree will be considered to have withdrawn from the GSBS. Once having withdrawn, a student who wishes to continue formal studies must apply all over again and be re-admitted to the GSBS.

TIME AWAY FROM THE LAB

Supported students receive their stipends as employees of one of the GSBS's parent institutions, each of which has distinct employment policies and procedures with which the student must comply. UTHealth and MDACC each have their own policies on several issues, such as the amount of time that graduate students are permitted to be away from their lab or workplace for purposes such as sick leave, vacation, and family-related leave. The GSBS policy on time away from the lab is deferred to the policy of the institution at which the student is employed. When a student joins the lab or research group of a faculty member, the student should apprise him- or herself of these policies. In all cases, however, the students should remember that he or she is employed by the advisor, and the advisor sets the standards for work ethic and policies of the lab, including attendance standards and expectations. The student and advisor should always explicitly discuss the advisor's expectations before they make a mutual commitment. In all cases, it is the student's responsibility to request time away from the lab (or expected lab activities; in advance, when possible) and to keep the advisor, or the advisor's designee, informed in a timely manner of any unanticipated absences, e.g., for illness or family emergencies.

Students who wish to discuss a leave of absence and/or obtain the form and instructions to request a leave should contact the GSBS Office of Academic Affairs.

THE CURRICULUM

The Program has revised its curriculum over the past few years. This revision affects the entering classes starting in August, 2017. Students who matriculated prior to August, 2017 should follow the old curriculum. When that is difficult, the program will work with the student and with course co-ordinators to ensure that students are taught the subject matter of the old curriculum. Please note that at some point, the clinical rotation courses will no longer be offered and students who wait until the last minute might be told when they must take the course.

THE SPECIALIZED MASTER OF SCIENCE IN MEDICAL PHYSICS

COURSEWORK UNDER THE NEW CURRICULUM

The student must complete a minimum of 41 semester credit hours of didactic coursework, including 39 hours of required courses and two hours of electives and at least two hours of thesis for a minimum of 43 hours.

Required Courses		**Hours**
GS02-1052	Imaging Science	2
GS02-1072	Statistics for Medical Physicists	2
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1103	Introduction to Medical Physics II: Medical Imaging	4
GS02-1113	Introduction to Medical Physics III: Therapy	4
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	4
GS02-1203	Electronics for Medical Physicists	2
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1062	Introduction to Clinical Medical Physics	2
GS02-1133	Introduction to Radiation Protection	3
GS02-1063	Fundamental Anatomy, Physiology and Biology for Medical Physics I	3
GS02-1073	Fundamental Anatomy, Physiology and Biology for Medical Physics II	3
GS02-1731	Medical Physics Seminar	1 × 3
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1

Possible Elective Courses		**Hours**
GS01-1033	Introduction to Biostatistics and Bioinformatics	3
GS02-1022	Special Radiation Treatment Procedures	2
GS00-1610	Special Project Course: Radiation Transport Methods	2
GS00-1610	Special Project Course: Volumetric Image Reconstruction	2
GS00-1610	Special Project Course: Digital Signal Processing for Medical Physicists	2
GS00-1610	Special Project Course: Digital Image Processing for Medical Physicists	2
GS00-1610	Special Project Course: Grant Writing	1
GS02-1032	Principles of Magnetic Resonance Imaging	2
GS02-1012	Physics of Positron Emission Tomography	2
GS02-1011	Radiation-Induced Late Effects and Survivorship Journal Club	1
GS02-1014	Fundamental Biological Principles of Molecular Imaging and Therapeutics	4
	Other electives within the GSBS or at Rice University or the University of Houston	

COURSEWORK UNDER THE OLD CURRICULUM

The student must complete a minimum of 34 semester credit hours of didactic coursework, including 32 hours of required courses and two hours of electives, as well as eight hours of clinical rotations and at least one hour of thesis for a minimum of 43 hours.

Required Courses		Hours
GS02-1183	Applied Mathematics for Medical Physicists	3
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1103	Introduction to Medical Physics II: Medical Imaging	3
GS02-1113	Introduction to Medical Physics III: Therapy	3
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	3
GS02-1203	Electronics for Medical Physicists	3
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1042	Radiation Biology	2
GS02-1133	Introduction to Radiation Protection	3
GS02-1142	Anatomy and Oncology for Medical Physicists	2
GS02-1731	Medical Physics Seminar	1 × 3
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1

Possible Elective Courses		Hours
GS01-1033	Introduction to Biostatistics and Bioinformatics	3
GS02-1022	Special Radiation Treatment Procedures	2
GS00-1610	Special Project Course: Radiation Transport Methods	2
GS00-1610	Special Project Course: Volumetric Image Reconstruction	2
GS00-1610	Special Project Course: Digital Signal Processing for Medical Physicists	2
GS00-1610	Special Project Course: Digital Image Processing for Medical Physicists	2
GS00-1610	Special Project Course: Grant Writing	1
GS02-1032	Principles of Magnetic Resonance Imaging	2
GS02-1012	Physics of Positron Emission Tomography	2
GS02-1011	Radiation-Induced Late Effects and Survivorship Journal Club	1
GS02-1014	Fundamental Biological Principles of Molecular Imaging and Therapeutics	4
	Other electives within the GSBS or at Rice University or the University of Houston	

Clinical Rotations		Hours
GS02-1154	Introductory Radiation Therapy Physics Rotation	4
GS02-1174	Introductory Diagnostic Imaging Rotation	4

COURSE DESCRIPTIONS

The descriptions of these courses may be found on the GSBS Web site at: https://gsbs.uth.edu/academics/courses/index.htm?sortby=medicalPhysics1. SMS students should note carefully the requirement of at least two hours of electives and plan their course of study accordingly, perhaps even taking an elective in their first summer rather than waiting. Elective courses tend to be offered in the summer. The academic plan that follows does not take into account the compressed time frame that many SMS students face when trying to start a residency in July of their second year. Students who are planning on finishing by June of their second year should plan carefully as they might not be able to take any courses in that term, but register only for thesis hours.

TYPICAL S.M.S. ACADEMIC PLAN BEGINNING FALL 2017 (NEW CURRICULUM)

Year 1, Fall Semester, 2017		Hours
GS02-1052	Imaging Science	2
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1203	Electronics for Medical Physicists	2
GS02-1062	Introduction to Clinical Medical Physics	2
GS02-1731	Medical Physics Seminar	1
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1

Year 1, Spring Semester, 2018		Hours
GS02-1103	Introduction to Medical Physics II: Medical Imaging	4
GS02-1113	Introduction to Medical Physics III: Therapy	4
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1731	Medical Physics Seminar	1

***** Deadline for Forming the Advisory Committee *****

Year 1, Summer Semester, 2018		Hours
GS00-1520	Research in Biomedical Sciences	3-6
	Electives	0-3
GS02-1133	Introduction to Radiation Protection	3

***** Goal for Petitioning to Candidacy for the M.S. Degree *****

Year 2, Fall Semester, 2018		Hours
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	4
GS00-1910	Thesis for Master of Science	3
GS02-1072	Statistics for Medical Physicists	2
GS02-1063	Fundamental Anatomy, Physiology and Biology for Medical Physics I	3
GS02-1731	Medical Physics Seminar	1

Year 2, Spring Semester, 2019		Hours
GS02-1073	Fundamental Anatomy, Physiology and Biology for Medical Physics II	3
GS00-1910	Thesis for Master of Science (after candidacy is approved)	6-9
	Electives	0-3

Year 2, Summer Semester, 2019		Hours
GS00-1910	Thesis for Master of Science	3-6
	Electives	0-3

TYPICAL S.M.S. ACADEMIC PLAN BEGINNING FALL 2016 (OLD CURRICULUM)

Year 1, Fall Semester, 2016		Hours
GS02-1183	Applied Mathematics for Medical Physicists	3
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1203	Electronics for Medical Physicists	3
GS02-1042	Radiation Biology	2
	OR	
GS02-1142	Anatomy and Oncology for Medical Physicists	2
GS02-1731	Medical Physics Seminar	1
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1

Year 1, Spring Semester, 2017		Hours
GS02-1103	Introduction to Medical Physics II: Medical Imaging	3
GS02-1113	Introduction to Medical Physics III: Therapy	3
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	3
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1731	Medical Physics Seminar	1

***** Deadline for Forming the Advisory Committee *****

Year 1, Summer Semester, 2017		Hours
GS00-1520	Research in Biomedical Sciences	3-6
	Electives	0-3
GS02-1133	Introduction to Radiation Protection	3

***** Goal for Petitioning to Candidacy for the M.S. Degree *****

Year 2, Fall Semester, 2017		Hours
	Clinical Rotation I (Fall or Spring)	4
GS00-1520	Research in Biomedical Sciences	2-6
GS02-1042	Radiation Biology	2
	OR	
GS02-1142	Anatomy and Oncology for Medical Physicists	2
GS02-1731	Medical Physics Seminar	1

Year 2, Spring Semester, 2018		Hours
GS00-1520	Research in Biomedical Sciences (until candidacy is approved)	5-9
	OR	
GS00-1910	Thesis for Master of Science (after candidacy is approved)	5-9
	Clinical Rotation I or II (Spring or Summer)	4

Year 2, Summer Semester, 2018		Hours
GS00-1910	Thesis for Master of Science	2-6
	Electives	X
	Clinical Rotation II (if not taken in the Spring)	4

S.M.S. THESIS

A thesis that is of a sufficiently high quality for publication of the work in a refereed journal is required. The student must register for thesis credit for at least one semester. The student is admitted to candidacy upon the GSBS Academic Standards Committee's determining that the planned program of coursework, the abstract of the proposed research, and the proposed members of the Advisory Committee meet the GSBS standards. The student must be admitted to candidacy before receiving credit for the first semester of Thesis. Prior to admission to candidacy, the student should register for Research in Biomedical Sciences for research hours.

The S.M.S. thesis is considered complete after the delivery of a public seminar, the successful passing of an oral examination on the thesis by members of the Advisory Committee and other interested faculty, and the signing by all members of the student's Advisory Committee of the final written version of the thesis.

Prior to completing all of the degree requirements, the student is expected to prepare at least one manuscript based on the thesis work and to submit it for publication in an appropriate peer-reviewed scientific journal. Students are strongly encouraged to get this done while they are in the program. The demands of a residency or a job make it extremely difficult to write the manuscript after leaving the program, especially when the student's familiarity with the material is waning and access to the resources that supported the project might be restricted or cut off entirely.

Guidance from the GSBS is available here: https://gsbs.uth.edu/academics/ms-milestones/.

THE DOCTOR OF PHILOSOPHY IN MEDICAL PHYSICS

COURSEWORK UNDER THE NEW CURRICULUM

The minimum number of semester credit hours that are required for the PhD degree is 82. Since most PhD students take the 47 hours of required courses and research tutorials that are listed below, and then take at least two more years to complete their dissertations, it is rare that a student would not have enough credits to graduate. Even a student who enters with a master's degree in medical physics and waives many of these courses is almost certain to have enough credit hours just from research and dissertation. However, students who are on extremely ambitious timelines should keep an eye on this matter. If a student anticipates a problem, he or she should discuss this sooner rather than later with the Program Director and the appropriate people at the Graduate School.

Required Courses		**Hours**
GS02-1052	Imaging Science	2
GS02-1072	Statistics for Medical Physicists	2
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1103	Introduction to Medical Physics II: Medical Imaging	4
GS02-1113	Introduction to Medical Physics III: Therapy	4
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	4
GS02-1203	Electronics for Medical Physicists	2
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1062	Introduction to Clinical Medical Physics	2
GS02-1133	Introduction to Radiation Protection	3
GS02-1063	Fundamental Anatomy, Physiology and Biology for Medical Physics I	3
GS02-1073	Fundamental Anatomy, Physiology and Biology for Medical Physics II	3
GS02-1731	Medical Physics Seminar	1 × 3
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1
GS21-1152	Scientific Writing	2

Possible Elective Courses		**Hours**
GS01-1033	Introduction to Biostatistics and Bioinformatics	3
GS02-1022	Special Radiation Treatment Procedures	2
GS00-1610	Special Project Course: Radiation Transport Methods	2
GS00-1610	Special Project Course: Volumetric Image Reconstruction	2
GS00-1610	Special Project Course: Digital Signal Processing for Medical Physicists	2
GS00-1610	Special Project Course: Digital Image Processing for Medical Physicists	2
GS00-1610	Special Project Course: Grant Writing	1
GS02-1032	Principles of Magnetic Resonance Imaging	2
GS02-1012	Physics of Positron Emission Tomography	2
GS02-1011	Radiation-Induced Late Effects and Survivorship Journal Club	1
GS02-1014	Fundamental Biological Principles of Molecular Imaging and Therapeutics	4
	Other electives within the GSBS or at Rice University or the University of Houston	

Research Tutorials		**Hours**
GS00-1514	Tutorial Research Experience	2 × 3

COURSEWORK UNDER THE OLD CURRICULUM

The minimum number of semester credit hours that are required for the PhD degree is 82. Since most PhD students take the 52 hours of required courses, research tutorials and clinical rotations that are listed below, and then take at least two more years to complete their dissertations, it is rare that a student would not have enough credits to graduate. Even a student who enters with a master's degree in medical physics and waives many of these courses is almost certain to have enough credit hours just from research and dissertation. However, students who are on extremely ambitious timelines should keep an eye on this matter.

Required Courses		Hours
GS02-1183	Applied Mathematics for Medical Physicists	3
GS02-1014	Fundamental Biological Principles of Molecular Imaging and Therapeutics	4
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1103	Introduction to Medical Physics II: Medical Imaging	3
GS02-1113	Introduction to Medical Physics III: Therapy	3
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	3
GS02-1203	Electronics for Medical Physicists	3
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1042	Radiation Biology	2
GS02-1133	Introduction to Radiation Protection	3
GS02-1142	Anatomy and Oncology for Medical Physicists	2
GS02-1731	Medical Physics Seminar	1 × 3
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1
GS21-1152	Scientific Writing	2

Possible Elective Courses		Hours
GS01-1033	Introduction to Biostatistics and Bioinformatics	3
GS02-1022	Special Radiation Treatment Procedures	2
GS00-1610	Special Project Course: Radiation Transport Methods	2
GS00-1610	Special Project Course: Volumetric Image Reconstruction	2
GS00-1610	Special Project Course: Digital Signal Processing for Medical Physicists	2
GS00-1610	Special Project Course: Digital Image Processing for Medical Physicists	2
GS00-1610	Special Project Course: Grant Writing	1
GS02-1032	Principles of Magnetic Resonance Imaging	2
GS02-1012	Physics of Positron Emission Tomography	2
GS02-1011	Radiation-Induced Late Effects and Survivorship Journal Club	1
	Other electives within the GSBS or at Rice University or the University of Houston	

Research Tutorials		Hours
GS00-1514	Tutorial Research Experience	2 × 3

Clinical Rotations		Hours
GS02-1154	Introductory Radiation Therapy Physics Rotation	4
GS02-1174	Introductory Diagnostic Imaging Rotation	4

The descriptions of these courses may be found on the GSBS Web site at https://gsbs.uth.edu/academics/courses/index.htm?sortby=medicalPhysics1.

TYPICAL ACADEMIC PLAN (MS BYPASS OPTION) BEGINNING FALL 2016 (NEW CURRICULUM)

Year 1, Fall Semester, 2017		Hours
GS00-1514	Tutorial Research Experience 1	2
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1203	Electronics for Medical Physicists	2
GS02-1062	Introduction to Clinical Medical Physics	2
GS02-1052	Imaging Science	2
GS02-1731	Medical Physics Seminar	1
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1

Year 1, Spring Semester, 2018		Hours
GS00-1514	Tutorial Research Experience 2	2
GS02-1103	Introduction to Medical Physics II: Medical Imaging	4
GS02-1113	Introduction to Medical Physics III: Therapy	4
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1731	Medical Physics Seminar	1

***** Goal for Forming the Advisory Committee *****

Year 1, Summer Semester, 2018		Hours
GS00-1514	Tutorial Research Experience 3	2
	Elective, Special Project or Research	0-3
GS02-1133	Introduction to Radiation Protection	3
GS00-1520	Research in the Biomedical Sciences	0-4

***** Deadline for Forming the Advisory Committee *****

Year 2, Fall Semester, 2018		Hours
GS02-1072	Statistics for Medical Physicists	2
GS00-1520	Research in Biomedical Sciences	0-3
GS02-1193	Introduction to Medical Physics IV: Physics of Nuclear Medicine and Magnetic Resonance Imagine	4
GS02-1063	Fundamental Anatomy, Physiology and Biology for Medical Physics I	3
GS02-1731	Medical Physics Seminar	1

Year 2, Spring Semester, 2019		Hours
GS02-1073	Fundamental Anatomy, Physiology and Biology for Medical Physics II	3
	Electives	0-3
GS00-1520	Research in Biomedical Sciences	1-6
GS21-1152	Scientific Writing	2

Year 2, Summer Semester, 2019		Hours
GS00-1520	Research in Biomedical Sciences	1-6
	Elective, Special Project or Research	X

***** Deadline for Scheduling of the Ph.D. Oral Candidacy Examination *****

Year 3, Fall Semester, 2019		Hours
GS00-1520	Research in Biomedical Sciences (until candidacy is approved)	9

***** Deadline for Advancing to Ph.D. Candidacy *****

Year 3, Spring Semester, 2020		Hours
GS00-1920	Dissertation for Doctor of Philosophy (after candidacy is approved)	9

Year 3, Summer Semester, 2020		Hours
GS00-1920	Dissertation for Doctor of Philosophy	1-6
	Elective	X

Year 4, Fall Semester, 2020		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 4, Spring Semester, 2021		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 4, Summer Semester, 2021		Hours
GS00-1920	Dissertation for Doctor of Philosophy	6

Year 5, Fall Semester, 2021		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 5, Spring Semester, 2022		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 5, Summer Semester, 2022		Hours
GS00-1920	Dissertation for Doctor of Philosophy	1-6

***** Goal for Defending the Ph.D. Dissertation and Graduating *****

TYPICAL ACADEMIC PLAN (MS BYPASS OPTION) BEGINNING FALL 2016 (OLD CURRICULUM)

Year 1, Fall Semester, 2016		Hours
GS00-1514	Tutorial Research Experience 1	2
GS02-1093	Introduction to Medical Physics I: Basic Interactions	3
GS02-1203	Electronics for Medical Physicists	3
GS02-1042	Radiation Biology	2
	OR	
GS02-1142	Anatomy and Oncology for Medical Physicists	2
GS02-1731	Medical Physics Seminar	1
GS21-1051	The Ethical Dimensions of the Biomedical Sciences	1

Year 1, Spring Semester, 2017		Hours
GS00-1514	Tutorial Research Experience 2	2
GS02-1103	Introduction to Medical Physics II: Medical Imaging	3
	OR	
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	3
GS02-1113	Introduction to Medical Physics III: Therapy	3
GS02-1053	Radiation Detection, Instrumentation and Data Analysis	3
GS02-1731	Medical Physics Seminar	1

***** Goal for Forming the Advisory Committee *****

Year 1, Summer Semester, 2017		Hours
GS00-1514	Tutorial Research Experience 3	2
	Elective, Special Project or Research	2
GS02-1133	Introduction to Radiation Protection	3

***** Deadline for Forming the Advisory Committee *****

Year 2, Fall Semester, 2017		Hours
GS02-1183	Applied Mathematics for Medical Physicists	3
GS00-1520	Research in Biomedical Sciences	1-3
GS02-1042	Radiation Biology	2
	OR	
GS02-1142	Anatomy and Oncology for Medical Physicists	2
GS02-1731	Medical Physics Seminar	1

Year 2, Spring Semester, 2018		Hours
GS02-1014	Fundamental Biological Principles of Molecular Imaging and Therapeutics	4
GS02-1103	Introduction to Medical Physics II: Medical Imaging	3
	OR	
GS02-1193	Introduction to Medical Physics IV: Nuclear Medicine	3
GS00-1520	Research in Biomedical Sciences	1-4
GS21-1152	Scientific Writing	2

Year 2, Summer Semester, 2018		Hours
GS00-1520	Research in Biomedical Sciences	1-6
	Elective, Special Project or Research	X

***** Deadline for Scheduling of the Ph.D. Oral Candidacy Examination *****

Year 3, Fall Semester, 2018		Hours
GS00-1520	Research in Biomedical Sciences (until candidacy is approved)	9

***** Deadline for Advancing to Ph.D. Candidacy *****

Year 3, Spring Semester, 2019		Hours
GS00-1920	Dissertation for Doctor of Philosophy (after candidacy is approved)	9

Year 3, Summer Semester, 2019		Hours
GS00-1920	Dissertation for Doctor of Philosophy	1-6
	Elective	X

Year 4, Fall Semester, 2019		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 4, Spring Semester, 2020		Hours
GS00-1920	Dissertation for Doctor of Philosophy	5
	Clinical Rotation I (Spring or Summer)	4

Year 4, Summer Semester, 2020		Hours
GS00-1920	Dissertation for Doctor of Philosophy	2-6
	Clinical Rotation II (Summer or Fall)	4

Year 5, Fall Semester, 2020		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 5, Spring Semester, 2021		Hours
GS00-1920	Dissertation for Doctor of Philosophy	9

Year 5, Summer Semester, 2021		Hours
GS00-1920	Dissertation for Doctor of Philosophy	1-6

***** Goal for Defending the Ph.D. Dissertation and Graduating *****

STEPS TOWARD THE PH.D. DEGREE

The full progression to the Ph.D. degree involves:

- The selection of an advisor
- The formation, in co-operation with the advisor, of an Advisory Committee
- *The advancement to candidacy for the M.S. degree*
- *The conduct of research for and the writing and defense of the M.S. thesis*
- The formation of the Ph.D. Candidacy Examination Committee
- The preparation of an NIH-style research plan for the candidacy examination, whether it be the on-topic or off-topic format and examination by the Examination Committee
- The conduct of Ph.D. research and the writing and defense of the Ph.D. dissertation
- The submission of a manuscript to an appropriate peer-reviewed journal.

The two M.S. steps are italicized because almost all medical physics Ph.D. students bypass those two steps by bypassing the M.S. degree. They are able to do this because either they matriculated into the program with a thesis-based master's degree in a physical science or engineering discipline or they used the program's M.S.-bypass option. In either case, it is the Advisory Committee that approves the student's request to bypass the M.S. degree and to proceed directly to the Ph.D. Candidacy Examination. The Candidacy Examination Committee will then assess the appropriateness of bypassing the master's degree as part of the candidacy examination and approve it or not. The academic plan above assumes the M.S. bypass. Students wishing to pursue the M.S. degree *en route* to the Ph.D. should seek guidance from the Program Office.

In order for a student without a thesis-based master's degree to bypass the M.S., prior to taking the candidacy examination, he or she must have submitted a first-authored manuscript to an appropriate journal based upon work performed here in the Medical Physics Program. This manuscript is in addition to the manuscript that is expected of all Ph.D. students by the time of graduation. Students taking the M.S. by-pass option thus are effectively required to have two such papers prior to graduation.

The formal decision to grant the M.S. bypass is made at the time of the student's Ph.D. Candidacy Examination. Detailed guidance for the Candidacy Examination is given below.

The Graduate School requirement that the "graduation manuscript" have been accepted by a journal before the student can graduate applies to Ph.D. students who matriculated in August, 2014 or later. The more senior students need only have submitted their manuscript prior to the dissertation defense. This policy is intended to encourage Ph.D. students (and their advisors) to have their dissertation work ready for publication well before their defense. This avoids the situation in which a student successfully defends the Ph.D. dissertation but has not written up the work for publication before leaving. Even when such students leave with the best of intentions, the old adage, "out of sight, out of mind," leads to long and counterproductive delays in publication that can harm the student's future career prospects. The best time to write the manuscript is when the material is fresh in the student's mind and when the resources to perform last minute experiments or re-analyses of the data are still available to the student. This requirement encourages students and advisors to consider plans for publications at an early stage in dissertation projects. Given the six months or more that it can take to get even a good manuscript all the way through the review process to acceptance, students should plan ahead and not dawdle.

The Advisory Committee will ultimately judge whether or not the student's research accomplishments are sufficient for the Ph.D. degree. Committees commonly expect more than one publication before the dissertation defense. Students are strongly encouraged to discuss past publications and plans for future publications with their Advisory Committees at each meeting. The final evaluation of a student's readiness to defend the Ph.D. thesis is made by the Advisory Committee.

Guidance from the GSBS Website is available here: https://gsbs.uth.edu/academics/phd-milestones/.

PH.D. CANDIDACY EXAMINATION

The Medical Physics program, along with many of the other programs in the Graduate School, has reverted from the so-called "off-topic" candidacy examination back to an "on-topic" examination. Student who matriculated prior to August, 2016, but have yet to take the candidacy examination have the option of choosing either type of examination. Students who matriculated in August, 2016 or later must take the on-topic examination. The procedure for the two examinations is different. Both are described below.

THE OFF-TOPIC EXAMINATION FOR CANDIDACY

Passing the candidacy examination is a milestone in the Ph.D. student's education that demonstrates his or her mastery of the broad expanse of medical physics and a deep understanding of the topic of the examination. The examination on subject matter that is substantially different than the student's research, that is, one that is "off-topic," assesses both the breadth and the depth of the student's preparation for dissertation work.

Because the Ph.D. is a research degree, the examination includes a written component in the format of the research plan from an NIH-style grant proposal with a six-page research plan. Because the Ph.D. degree is the normal prerequisite for an academic career, the examination includes an oral presentation at which the student will profess, in the ancient sense of having or claiming knowledge or skill in a subject, his or her off-topic research premise and will defend its validity.

For the subject of the student's examination to be sufficiently "off-topic," it should differ substantially from the student's previous work (such as a master's thesis), the student's proposed dissertation project, the subjects of any of the student's tutorials, and the work that is being done in the student's research group or by the student's advisor.

SELECTION OF THE EXAMINATION TOPIC

The student will submit to his or her Advisory Committee three one-page abstracts describing the hypothesis and specific aims of three possible examination topics along with the abstract of the student's actual research work. The student's Advisory Committee will assign the topic of the student's candidacy examination from among the three off-topic abstracts.

COMPOSITION OF THE EXAMINATION COMMITTEE

The student and the student's advisor will recommend the membership of the Examination Committee. The student's Advisory Committee may also participate in this process. In addition to the usual GSBS rules for the composition of the Examining Committee, the committee should have at least one member with expertise in the topic of the examination.

APPROVAL OF THE TOPIC AND OF THE EXAMINATION COMMITTEE

The student submits the off-topic abstract that has been chosen for the examination, identified as such, along with the other two off-topic abstracts, his or her actual dissertation work abstract and the proposed membership of the Examination Committee to the Medical Physics Program Director with a request for approval by the Medical Physics Program.

After approval by the Program, the student will submit the membership of the Examining Committee, the abstract of his or her actual dissertation project and the abstract only for the subject of the examination (but not the two off-topic abstracts that were not selected) to the GSBS Office of Academic Affairs for approval by the Academic Standards Committee of the GSBS.

The student and the members of the Examining Committee will be informed when the examination topic and committee have been approved by the Academic Standards Committee.

PREPARATION FOR AND CONDUCT OF THE EXAMINATION

The student should schedule the examination within six weeks of receiving the approval of the Academic Standards Committee. The student should submit the written proposal in the format of an NIH research plan to the Examining Committee at least two weeks prior to the examination.

The student will meet with the Examination Committee, present the research plan and answer the committee's questions regarding it and any other aspect of medical physics. Because of the limited time afforded to the student to prepare for the examination, it is anticipated that the examination will concentrate on the student's general knowledge of medical physics, the overall soundness of the research plan and a depth of knowledge sufficient for the student to design a reasonable research strategy and to identify risks and propose their amelioration. Less emphasis should be placed on the minutiae that had previously been expected of students who had already devoted numerous months of effort to the topic of the examination when it was on-topic.

This is a private examination.

The Examination Committee can pass the student unconditionally or with conditions. It can require a re-examination. It can fail the student and either allow or deny the student the opportunity to complete a terminal M.S. degree. For students who pass, it can approve bypassing the M.S. or it can require that the student earn the M.S. *en route* to the Ph.D.

FORMAT OF THE THREE OFF-TOPIC ABSTRACTS

Each of the three abstracts should be an NIH style one-page specific aims page (PHS 398) *with the additional requirement that the significance be stated explicitly.*

General instructions for preparing an NIH proposal using the PHS 398 format can be downloaded from the NIH website: http://grants.nih.gov/grants/funding/phs398/phs398.pdf

The requirements for the PHS 398 one-page specific aims page are defined in section 5.5.2 (of the PHS instructions)

> State concisely the goals of the proposed research and summarize the expected outcome(s), including the impact that the results of the proposed research will have on the research field(s) involved. List succinctly the specific objectives of the research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.

The formatting should follow the NIH guidelines for font and margins:

- one of four approved fonts: Palatino, Georgia, Arial or Helvetica
- font size of 11 points or larger
- at least one-half inch margins (top, bottom, left, and right)
- single spacing

In general, the Advisory Committee will be looking to see that each of the three abstracts addresses the following points:

- Brief summary of current knowledge
- A gap in that knowledge
- The objective of the proposed project, i.e., how the proposed research would fill the gap in that knowledge
- Central hypothesis
- Specific aims
- Expected outcomes of the project
- Significance

THE ON-TOPIC EXAMINATION FOR CANDIDACY

The on-topic examination assesses both the breadth and the depth of the student's knowledge of medical physics and of his or her readiness to embark upon dissertation research. Depth of knowledge and understanding is gauged through an oral examination that follows the student's presentation of a research proposal and focuses upon that proposal, including such points as the rationale for the research, its innovation and significance, its background, technical approaches, experimental strategies, interpretation of results and assessment of pitfalls, feasibility and significance. The originality of the proposal will also be considered. The examination on breadth is a second oral examination in which the student is asked a broad range of questions regarding medical physics and given the opportunity to demonstrate that he or she has sufficient knowledge to find a solution or to develop a rational approach to answering the examiners' questions. Students should anticipate that each of these three parts will take an hour, so that the total duration of the examination will be three hours.

PREPARATION FOR THE ON-TOPIC EXAMINATION

Students must have taken and passed the Scientific Writing course, GS21-1151, before applying for candidacy.

Students will write a Specific Aims page that includes a clear and scientifically significant hypothesis regarding the work that they are doing for their Ph.D. projects. That hypothesis is to be tested by two to four Specific Aims. This Specific Aims page will be reviewed and approved by the student's Advisory Committee before it is submitted to the Academic Standards Committee of the GSBS as part of the Petition for the Ph.D. Candidacy Examination. The form for that petition can be found on the GSBS Forms page here: https://gsbs.uth.edu/academics/forms/. The student's advisor and Advisory Committee may function as teachers to help guide the process of developing the hypothesis and specific aims, but they must ensure that the intellectual content is largely the work of the student. The petition for the candidacy examination must be submitted to the Graduate School by the end of the student's second year (which is usually the end of the second summer that the student is in the program). The student is expected to have taken the examination by the end of the first term of his or her third year in the program (which is usually the third fall that the student is in the program).

The student, the advisor and the Advisory Committee will decide upon the composition of the Examination Committee in accordance with the requirements below and those of the GSBS. The student must provide each member of the Examining Committee with the Specific Aims page at the time that the committee is formed.

THE ON-TOPIC EXAMINATION COMMITTEE

The Medical Physics Program has a committee, the Medical Physics Candidacy Examination Committee (see page 49) of four faculty members, two of whom are from Radiation Physics and two from Imaging Physics. One member of this committee from each of the two specialties will serve on each student's candidacy examination committee. Neither of these members may satisfy the requirement that one member be from outside of the student's major discipline. The student's Advisory Committee will invite the two members of this committee, but might not get its first choice, depending on their other commitments. The remaining members of the examination committee will be selected by the student's Advisory Committee in the same manner that the members of an off-topic

examination committee are determined. The student's advisor may not serve on the on-topic examination committee, for example.

THE ON-TOPIC RESEARCH PROPOSAL

The student will independently prepare a six-page proposal in the style of an NIH R21 proposal that will include the following sections

- Abstract (350 words or fewer)
- Specific Aims (one page; as described above)
- Research Strategy (six pages)
  - Significance
  - Innovation
  - Approach
- References Cited

Preliminary data are not required for this proposal, but may be included if they are available. Students may also include model figures that illustrate prior or expected results and may include properly referenced data from other published work. This proposal must be given to the members of the Examining Committee at least four weeks prior to the examination (not the two weeks that are stated in the general GSBS instructions).

Note that the GSBS Web site refers to an F31 proposal. The Medical Physics Program prefers that our students follow the R21 style because it is more general and puts a greater emphasis on significance and innovation, which are essential aspects of a wider range of proposals than just fellowship proposals.

GRADUATE FELLOWSHIPS

One of the benefits of writing an on-topic proposal is that the student will be well along in the process to apply for a pre-doctoral fellowship such as the F-31 Ruth L. Kirchstein Predoctoral Individual National Research Service Award: https://researchtraining.nih.gov/programs/fellowships/F31. First and second year PhD students should investigate the range of opportunities that are available and apply for appropriate pre-doctoral fellowships. The GSBS maintains a listing of them here: https://gsbs.uth.edu/current-students/training-grants-and-fellowships/external-funding-opportunities.htm. The program encourages all eligible students to apply for these awards. It will look good in the future to have received such an award. Having independent funding affords students more flexibility and independence in their research than if their work is tied tightly to the specific aims of their advisor's grants. The GSBS can help with some of the administrative aspects of the proposal. Several members of the Medical Physics faculty have experience as reviewers or mentors of graduate fellowship grants and can help as well.

COMMITTEES

THE M.S. ADVISORY COMMITTEE

The Advisory Committee will advise the S.M.S. student from the beginning of his or her thesis project. The first Advisory Committee meeting should take place as early as the summer semester of the first year. After advancing to candidacy, this committee oversees the student's progress for the remainder of his or her degree program.

THE TWO PH.D. COMMITTEES

During the Ph.D. student's graduate career, he or she will assemble two different committees. Each committee is formed for a specific purpose and need not have the same composition of members.

ADVISORY COMMITTEE

The Advisory Committee will advise the student from when the thesis project is started through the completion of the required coursework and the student's readiness to take the Ph.D. Candidacy Examination. It will choose the topic for the student's Candidacy Examination. The first advisory meeting should take place in the summer of the first year or early fall of the second year. After the student has advanced to candidacy, this committee then will oversee his or her progress for the remainder of his or her graduate education.

CHOOSING ADVISORY COMMITTEE MEMBERS

Normally, a minimum of three medical physics faculty members (including the student's advisor) must be on the Advisory Committee. The composition of the advisory committee will be an important contributor to the student's overall success since the committee oversees all aspects of his or her education. Thus, it is important to choose faculty members who can best help the student to achieve his or her academic and experimental goals. The advisor's help should be sought in this process since he or she is likely to know more of the faculty members than a student would and is also likely to have some specific ideas about which faculty members can strengthen the committee. The GSBS staff can also be helpful in this process. Other students will have good advice as well. It would be prudent to get the advisor's okay before approaching prospective committee members.

The GSBS has very specific requirements regarding the composition of students' committees and all of the members must be approved by the GSBS Academic Standards Committee. Note that at least one member of each of the committees must have substantial prior GSBS experience on such committees and one of the members must be outside of the student's discipline.

Try to choose a well-balanced committee that includes experts in the planned research area and experts in the techniques and approaches that are likely to be used, as well as outside members who will lend a fresh perspective to the ideas and approaches. The "outside" members must be outside of the student's area of research. We strongly suggest that the student discuss the selection of outside members with his or her advisor and with the Program Director, who must approve all committee proposals prior to submission of the requirement documents to the GSBS Academic Standards Committee (ASC). Specific to the Medical Physics Program, physicians in Radiation Oncology, Diagnostic or Interventional Radiology, and Nuclear Medicine are **not** considered by the ASC to be outside members. For medical physics students, it is common, but not required, for the outside member to be a member of the Quantitative Sciences Program (i.e., a biostatistician).

In addition to considering the expertise and research interests of prospective committee members, it is also important to consider their availability. It is often hard to schedule committee meetings when all of the members have extremely busy schedules. Also, it is highly desirable to choose some members who will serve on the Advisory Committee both before and after the Candidacy Examination. This lends some consistency to the

student's graduate studies. These "long-term" committee members will become extremely familiar with the student's work and training. This is a factor that becomes critically important when soliciting letters of recommendation for residency or post-doctoral position applications, fellowship applications, and other career purposes.

It is the student's responsibility to meet with the "outside member" well in advance of committee meetings to provide background material and to discuss the student's work informally. It would also be helpful to "outside members" not conversant with the area if student presentations were to begin with a brief general introduction describing the problem that the student is studying. The ASC feels that this experience would also be valuable to students by preparing them for other presentations to general audiences and helping them to organize their thoughts about the significance of their work.

- Individuals who do not belong to the GSBS faculty may serve on a student's committee, but there may be no more than two such individuals on a committee. **Include the NIH-formatted biosketch of each proposed member who is not a member of the GSBS faculty along with the Advisory Committee form**.
- Not all of the GSBS faculty members on a committee may come from the same Department or Program. If four members are from the same Department or Program, the fifth member, must be from outside of the Department or Program and must be a GSBS faculty member. If a committee has non-GSBS faculty, the faculty who are GSBS faculty may not all be from the same Department or Program.
- The advisor of a Ph.D. student must be a Regular Member of the GSBS faculty. Associate Members of the Faculty may advise M.S. students.
- There will be no co-advisors or co-chairs.
- At least one member of the committee must be a GSBS faculty member with extensive GSBS Advisory Committee experience. The experienced member is charged with advising the student regarding GSBS policies and deadlines, and, if necessary, with mentoring inexperienced advisors on GSBS policies.

PURPOSE OF THE FIRST ADVISORY COMMITTEE MEETING

The first meeting of the Advisory Committee is a time for the student and the committee to get to know one another. Schedule it during the summer of the first year or, at the latest, early in the fall of the second year. This is very important so that the student's committee can do its job of advising on courses and providing input on the proposed research project.

While it is not necessary to have data to present at the first committee meeting, the committee will expect the student to make a short 20-30 minute presentation on the background of the project, his or her research plans for the next six months, and the project's long term goals. The emphasis should be placed on the plan for the next six months. The student should review the presentation and slides with his or her advisor prior to the committee meeting.

WHAT TO BRING TO THE FIRST ADVISORY MEETING (INCLUDING ENOUGH COPIES FOR ALL COMMITTEE MEMBERS OF ANY DOCUMENTS)

- The student's CV or NIH-style biosketch that includes prior education, degrees earned, honors received and any publications.
- Research tutorials that have been completed.
- A list of all of the GSBS classes that the student has taken and the grades earned.
- Courses that the student plans to take.
- A written summary of the student's proposed research plan using the Pre-Meeting Student Progress Update form on the GSBS Web site: https://gsbs.uth.edu/academics/forms/. This should include an Introduction, a simple description of the plan, and the goals for the next six months. It is not necessary to present data at this first meeting.

- The presentation slides. Advice that is generally applicable to all oral presentations is to number the slides. That allows the audience to identify easily to a slide about which they plan to inquire during a questioning session at the end of the presentation.

SUBSEQUENT ADVISORY COMMITTEE MEETINGS

At subsequent Advisory Committee meetings, the student must send his or her Pre-Meeting Student Progress Update to the committee members at least five days before the meeting using the form that is provided by the GSBS at https://gsbs.uth.edu/academics/forms/. It is helpful to remind the committee of how long the student has been enrolled in the GSBS and to inform them of any new publications, courses completed, etc.

For subsequent meetings, experiments attempted or completed in the past six months should be briefly summarized. In all cases, the research summary should end with a list of realistic goals for the next six months, and a comparison to the goals that had been presented at the previous meeting.

Remember, these goals are not contracts; they are simply to help the student plan the next six months. The goals need not all be met before scheduling the next committee meeting. The committee expects that unforeseen problems or changes in the student's research directions will occur. An important function of the committee is to help the student rise to meet these challenges.

CANDIDACY EXAMINATION COMMITTEE

The Candidacy Examination Committee administers the Ph.D. Candidacy Examination, which should be taken in the summer semester of the second year or the fall semester of the third year.

The student and advisor form the Examining Committee before the student petitions to take the Ph.D. Candidacy Examination. The Medical Physics Program Director must approve the Examining Committee membership prior to the student's submission of the petition to the GSBS Academic Standards Committee. Keep in mind the following requirements when selecting the members:

- The committee must include five faculty members, among them at least two of whom have not served on the student's Advisory Committee.
- Normally, at least three of the five must be members of the Medical Physics Program faculty.
- **The chair of the examining committee must be a member of the Medical Physics Program faculty.**
- Not all of the members may come from the same department or the same GSBS program.
- One member must be from an area of research outside of the student's primary area of interest.
- Individuals outside of the GSBS faculty may serve on a student's committee when their particular areas of expertise are not represented on the GSBS faculty, but there may be no more than two such members on the committee.
- If four of the members are from the same Department or Program, the fifth member must be from outside of the Department or Program and must be a GSBS faculty member.
- In the case of an on-topic examination, two members of the Examining Committee must come from the program faculty committee that is charged with helping with candidacy examinations as described earlier.
- The student's Ph.D. advisor is not allowed to be a member of the Examining Committee or even to be present in the room during the examination.

POST-CANDIDACY ADVISORY COMMITTEE

The Advisory Committee typically continues on after the Candidacy Examination as it had before. However, the student and advisor should use this point in the student's progress through the program to assess the direction that the student's research is taking and to fine-tune the membership of the advisory committee if changing its membership would make it more effective.

SCHEDULING ADVISORY COMMITTEE MEETINGS

The purpose of the committee meeting is to get feedback on the student's experimental approaches, interpretations, and goals. Often students delay scheduling a meeting because they feel that they do not have enough new data. Such delays are counterproductive to graduation in a timely manner. Often the time when the committee can be most helpful is when things are going slowly or are not working according to plan. Regular meetings with the committee will keep its members abreast of the student's goals and will give them an opportunity to suggest new approaches, experiments, etc. that could move the work forward. Delaying committee meetings will only slow down the student's progress.

HOW TO CONTACT THE COMMITTEE MEMBERS

The best way to contact the committee members and set up a meeting is through the support personnel of the student's mentor or by sending Email directly to the committee members. Start working on scheduling a meeting two months in advance. Keep in mind that meetings that are to be held during holiday periods, around the times of national conferences and during the summer vacation months are more difficult to schedule.

SCHEDULING DIFFICULTIES AND CANCELLATIONS OR "NO SHOWS"

If it turns out to be very difficult to find a time when all of the committee members can be present, it is possible to hold the meeting with one member absent, provided that the advisor approves of this and the committee member who will be absent agrees to miss the meeting. After the meeting, be sure to check back with the absent member to discuss what happened.

The exceptions to this are for the Candidacy Examination and the thesis and dissertation defenses, at which all committee members are expected to be present. Note: the GSBS has guidelines regarding committee member substitutions at these meetings when that becomes necessary. Remember, the earlier that the scheduling process is begun, the more likely it will be to be able to find a time when everyone is available. It is unrealistic to wait until a few days before the deadline to hold the next meeting and expect to find a time when five or more busy people can all attend.

RESERVING A MEETING ROOM

Contact the advisor's support staff or a departmental administrative assistant to reserve a room for the meeting. While most Advisory Committee meetings take one to one and one-half hours, reserve the room for two hours in order to provide ample time for setting up before the meeting and for discussion after the presentation.

The room for the Candidacy Examination should be scheduled for three and one-half to four hours, which allows time for setting up, the research plan presentation, the depth examination, the breadth examination, and a bit of time in case any of the phases of the examination runs over.

The room for the Dissertation Defense should be scheduled for a total of three hours: an actual meeting duration of two hours (including the public presentation and the private examination) with perhaps half an hour prior to set up and half an hour afterward in case the meeting runs longer than usual.

MEETING CONFIRMATION AND REMINDERS

After the room is reserved, send a calendar invitation to the committee members to confirm the date, time and room number for the committee meeting. Also send a reminder Email to them at least five days before the meeting with the Student Progress Update form, and then a final reminder one day before.

PRESENTATION GUIDELINES

For each committee meeting, the student should prepare a 35-45 minute talk summarizing the background of the project, the research goals and the progress toward those goals. The student should review the presentation with his or her advisor prior to the meeting.

The content of the talk should largely follow the written research summary that was submitted to the committee in the pre-meeting update. Review the specific experiments that have been done since the last meeting and end with the goals for the next six months. Keep the presentation focused on the major goals for the thesis. Most advisors have a lot of experience making good slide presentations and should be asked for advice on making the slides. All data should be clearly labeled. Diagrams illustrating the experiments are often helpful. This will be good practice for preparing elements of publications and of the thesis or dissertation.

During the presentation, committee members might ask for clarification of the experimental approach or results. After the presentation, the committee is likely to ask additional questions in order to initiate a discussion of the quality of the data, the student's interpretation of them, alternative approaches to the problem and so on. The student should take notes of experiments, alternatives, criticisms, etc. that are offered by the committee during this time as this discussion is intended to help the student.

A well-prepared student who is familiar with his or her research topic can expect the committee meeting to take one to one and one-half hours.

At the conclusion of each meeting, the student should have a clear understanding of the committee's recommendations for future experiments, data analyses, etc. Do not leave a committee meeting without obtaining such a clear view. Do not hesitate to ask for clarification of the committee's recommendation(s) and make sure, with the advisor's assistance, that there is a consensus among the committee members regarding such recommendations.

COMMITTEE MEETING REPORT

Using the form for Report of Advisory Committee Meeting that is available on the GSBS Web site at https://gsbs.uth.edu/academics/forms/, the student and the advisor will summarize the results of the meeting. The student should bring a paper copy of this form to the meeting so that the advisor can record the scores in the chart section. The student should complete his or her section immediately after the meeting and forward it to the advisor. The advisor will then fill out the chart on the official report, add the information that is requested on the third page and submit the completed report to the Office of Academic Affairs, GSBS, 3.8344 BSRB with a copy to the Program Office for the student's file. A copy of the report should also be sent by the advisor to each committee member and to the student.

This report is the only official record of the committee meeting, so it is very important that the GSBS receive the report in a timely manner. If the student has not received a copy of the report within a week, a gentle inquiry regarding its status should be made to the advisor.

MEDICAL PHYSICS PROGRAM STUDENT POLICIES

STUDENT LEAVE

Because the rules are complicated and differ for different students, please discuss matters of leave with the Program Manager. Ask for the Program Office for advice when there is any uncertainty.

ON-SITE ATTENDANCE

Regardless of the source of their funding, as a general rule, all students in the Medical Physics Program are expected to be on campus at MD Anderson or UTHealth, Monday through Friday, for at least four hours a day between the hours of 8:00 am and 5:00 pm. The faculty may require students to be available on relatively short notice for opportunities such as observing procedures, meeting with visitors and discussing aspects of the student's research. The faculty expects their students to be regularly on-site and working on their studies and research. At times, students will be required to attend seminars, which are typically given by visiting luminaries in the field of medical physics.

However, it is recognized that there are times when, perhaps due to equipment availability, students will be required to be present during the nighttime or on weekends and not during the day. Also, there may be times when working off-site (e.g., at home or in the library) may be advantageous (such as when writing a thesis or a paper). The student and advisor should agree on these exceptions to the general rule.

STUDENT ATTIRE

PURPOSE

The purpose of a student dress code is to provide standards that are consistent with those of the staff of the institution. Standards of attire are for the benefit of the students, employees and patients and ensure the safety and comfort of all involved.

Student dress is observed by others and is a reflection of the individual student, our Medical Physics Program and our profession of medical physics. Students who are part of the GSBS Medical Physics Program are expected to adhere to the guidelines below.

GUIDELINES

1. Clothing
    - To maintain a professional appearance, students should use good judgment when selecting the clothes that they wear on campus.
    - Appropriate undergarments are required.
    - All extremes should be avoided.
    - Wear appropriate maternity clothing during pregnancy.
    - On special occasions, with institutional approval, clothing relating to the occasion may be worn (e.g., sports championships, Halloween, Go Texan Day, blood drive, seasonal attire, etc.). Sometimes different divisions within the institution will have different rules regarding these special occasions, so determine the specific rules for your area.
    - A lab coat should be worn in patient care areas during clinic hours.
    - Denim jeans are permissible provided they are in good condition (i.e., clean and free of holes or patches).
    - The following are not acceptable: (1) skirt/dress/shorts' lengths shorter than 3" above the knee, measured from the center of the patella; (2) transparent, low-cut or tight, form-fitting garments; (3)

halter tops, sweatshirts, or jogging suits; and (4) shirts with logos other than institutional logos or those of appropriate professional groups.
- Shorts are not permitted during normal patient care hours (6:00 am – 6:00 pm, Monday-Friday).
- Clothing that protects the legs and feet below a lab coat (e.g., long pants, socks and closed-toe shoes) must be worn when working with hazardous materials in the laboratory.

2. Shoes
   - Footwear must provide a safe and secure footing, offer protection against potential hazards and be made of materials that enable a person to walk quietly on vinyl flooring. They must be appropriate to the uniform or style of clothing that is worn.
   - When working in laboratories or patient care areas, students are required to wear closed-toe shoes for safety and health reasons.
   - Shoes must be kept clean and maintained.

3. Hairstyles and Facial Hair
   - Hairstyles are expected to be generally moderate, conservative and in good taste. Long hair should be pulled back, if necessary, so that it will not come into contact with others, particularly patients.
   - Students who are working or observing in special cleanliness areas (e.g., surgery or interventional radiology) must keep their hair restrained by use of clips, surgical caps, etc.
   - Extremely long hair and unkempt mustaches and beards, especially for those students in contact with patients, are strongly discouraged. In the event that beards or mustaches are worn, it is expected that they be kept clean, well-trimmed and neat.
   - Students whose research or training requires wearing respirators are prohibited from having beards or other facial hair, such as long sideburns, that would interfere with the fit of the respirator face pieces.

4. Fingernails

   Fingernails must be of an appropriate length so they do not inhibit or detract from work functions or risk unsafe patient contact.

5. Cosmetics, Cologne/Perfume, Jewelry
   - Cosmetics should be used in moderation and in good taste. Extremes in make-up will not be permitted.
   - Refrain from wearing scented products in the workplace. Many people are especially sensitive to such fragrances, particularly patients receiving chemotherapy.
   - Appropriate jewelry may be worn in moderation. Safety conditions in some areas may not permit the wearing of jewelry.

6. Identification Badges/Radiation Monitors
   - Identification badges must be worn by all students while on campus.
   - Radiation monitors (i.e., dosimeters, sometimes called “radiation badges”) must be worn by students when working in radiation areas. These will be issued by the Radiation Safety Office.

STUDENT TRAVEL

The rules are complicated and differ for different students. Please consult the Program Manager for advice and the answers to questions.

PARENTAL LEAVE FOR GRADUATE RESEARCH ASSISTANTS

The rules for parental leave are extremely complicated. Students should discuss their options with the Program Manager.

Parental Leave is job-protected leave. According to HR, in an effort to treat employees and trainees fairly, if a student is pregnant and meets the eligibility of having worked fewer than 1,250 hours in a 12-month period immediately preceding the birth or adoption of a child or the placement of a foster child (under three years of age) he or she must contact the Human Resources department (5-myHR) to submit a request for *Parental Leave*.

Highlights*:

- Graduate Research Assistants are considered 0.5 full-time equivalent positions and do not qualify for Family Medical Leave (FML).
- To initiate Parental Leave, the trainee (mother-to-be or father-to-be) contacts the Leave Center at (713) 745-3652 within 30 days of the anticipated date of birth or placement of a child, but after having first notified the trainee's mentor.
- *Parental Leave* begins on the date of the birth of a biological child, or the adoption or foster care placement of a child under three years of age, and it extends for up to 12 weeks.
- The trainee needs to notify the Leave Center of the date that the leave officially begins, which is the date of birth or placement of the child.
- While on *Parental Leave,* the trainee may not work and may not be assigned work by his or her mentor.
- The *Parental Leave Policy* is summarized here: http://inside.mdanderson.org/humanresources/working-at-md-anderson/time-off-and-leave/parental-leave.html. For clarification, call Human Resources at (713) 745-MyHR.

**This document is a supplement to the Parental Leave Policy. This information was put together to highlight certain aspects of the policy and should not be considered a replacement for other items contained in the official policy. This attachment should be used in conjunction with MD Anderson's Parental Leave Policy and should not stand alone.*

LINEAR ACCELERATOR USE POLICY

Division of Radiation Oncology Linac Use Policy

October 17, 2014

Owners: Service Chiefs, Department Chair, Clinic Director

1) Purpose: Graduate student and postdoctoral fellow "trainees" will have occasion to use linear accelerators (linacs) or the proton machine for measurements. These machines are used for the treatment of patients.
   a) If the trainee does not have a thesis advisor/supervisor that works in the clinic, a co-supervisor from the thesis committee shall be named for the purpose of lending clinical support to the thesis advisor/supervisor and trainee.
2) Safety: It is of paramount importance that trainees observe safe practices when using radiation-producing machines, for their own safety and the safety of patients and clinic staff.
   a) The trainee shall attend a one hour lecture on linac safety before being cleared to use a linac. The lecture will be given periodically by the Department of Radiation Physics clinical director or their designee. Attendance will be recorded.
   b) It is mandatory that a radiation badge is worn while operating radiation-producing equipment.
3) Hands-on training:
   a) Trainees shall get hands-on linac operation training from their supervisor and/or the linac physicist and/or co-supervisor (with the linac physicist's permission) to comprise of startup, shutdown and linac operation in clinical and service mode. This training will be specific to machine group, e.g., iX, True Beam, Versa. Training may be done as a group, but each student shall demonstrate their ability to independently operate the machine to the linac physicist. The linac physicist shall "clear" the trainee for linac use.

b) This type of training also applies to all clinical QA measurement equipment that may be used by the trainee. The trainee shall arrange for this training with the physics assistants (PA's) and/or trainee supervisor or the co-supervisor.

4) Duty of the thesis supervisor:
   a) It is the duty of the trainee supervisor to introduce the trainee to the linac physicist, PA's and respective linac engineers.
   b) The trainee's supervisor shall be physically present the first couple of times that the trainee uses a linac until the supervisor is confident that the trainee is able to operate the linac independently.
   c) The trainee's supervising physicist shall be responsible for all the trainee's actions while in the clinic.
5) Arrangement to use linac:
   a) The trainee shall briefly describe to the linac physicist the duration of linac use and type of measurements being made. This is needed to minimize unnecessary unlimited use of the linac. A written description is preferred.
   b) Prior to independently using a linac, the trainee shall ensure that the linac physicist is comfortable with the trainee's understanding of the use of the linac. This might be minimal, but ensures that the physicist has met the student before first use. This also allows for the linac physicist to introduce unique linac features such as CT on Rails, Exactrac, etc. to the trainee.
   c) Each time the trainee needs to use a specific linac, the trainee shall email (at least 24 hour in advance) Radonc Linax cc'ing the linac physicist and backup linac physicist and trainee supervisor requesting to use the linac. The engineers shall not assign the linac to the trainee unless one of the linac physicists confirms that the trainee is cleared to use the linac.
   d) In the case there is a conflict with the linac schedule, the use of the linac for clinical use such as patient treatment, IMRT QA, linac QA has higher priority.
   e) In case the linac physicist is out, the linac representative becomes the backup linac physicist or another physicist from the clinical service.
   f) The trainee shall operate the linac when engineering and/or physics support is available (the trainee checks with engineering). At the conclusion of the use of the linac, the trainee should email the linac physicist, supervising physicist and engineers that they are done with the linac and run the daily QA to ensure that everything is in working order for patient treatments.
6) Measurement equipment:
   a) Any equipment that will be required should be requested from the PA's 24 hours prior.
   b) The trainee must let the PA know that they have the approval of the supervisor and the linac physicist.
   c) All equipment shall be returned to the original location, or the location designated by the physics assistant, in the condition that it was found (cables rolled up, tanks free of water, etc.).
   d) Additionally, the trainee shall contact the PA's before beginning measurements on the linac to make sure there is no QA to be delivered on that linac that evening.
7) Consequences:
   a) The linac physicist or representative has the right to deny linac use to a trainee.
   b) If there are any issues with the linac following the use by the trainee, the trainee shall meet together with their supervisor and the linac physicist to determine if the student may use the linac (or any linac in the department) in the future without their supervisor being present.

Please contact Rajat Kudchadker, Ph.D., Mary K Martel, Ph.D. or Geoffrey Ibbott, Ph.D. with questions about this policy.

MD ANDERSON AND UTHEALTH RESOURCES

MD ANDERSON RESEARCH WEEKLY

Research Weekly is a week-at-glance listing of scientific events at MD Anderson. It is distributed each Thursday. The email contains a brief description of scientific events for the following week. To subscribe, send an email to researchweekly@mdanderson.org and ask to be added to their mailing list.

MD ANDERSON DEPARTMENT OF SCIENTIFIC PUBLICATIONS

Hours: Monday – Friday 8:00 am to 5:00 pm
Phone: (713) 792-3305
Location: Pickens Academic Tower, 6th floor (FCT6.5086).
Website: http://inside.mdanderson.org/departments/scipub/

The Department of Scientific Publications provides a wide range of editorial services to the MD Anderson Cancer Center community, free of charge. Their main role is to assist MD Anderson faculty and staff with their publishing endeavors. They are available to

- Edit journal articles, book chapters, grant proposals, and abstracts.
- Consult with authors on early drafts of their work.
- Answer questions about publishing, book and journal production, diction, grammar, and style.

They have also some useful advice on their Web site for writing grant proposals and research papers. Use their "Advice on Writing …" link, http://inside.mdanderson.org/departments/scipub/advice-on-writing-r01-grant-proposals-research-articles-and-other-documents.html, to get started.

MD ANDERSON RESEARCH MEDICAL LIBRARY

Hours

Monday – Friday: 7:30 am to 7:00 pm
Saturday: Closed
Sunday: Closed

Telephone Numbers

Information Desk: (713) 792-2282
Document Delivery: (713) 745-4531
Fax: (713) 563-3650

Location: Pickens Academic Tower, 21st Floor. 1400 Pressler Street

Website: http://www3.mdanderson.org/library/

Trainee Services: http://mdanderson.libguides.com/trainees

Journal and Online Database Access

The Research Medical Library licenses access to over 15,000 journals online, and subscribes to approximately 550 journals in print. For recent years, about 90% of the print journals are also available online. The Online Journals page of the library's website is the one best place to check to see what the library has available both

online and in print. The library also provides access to approximately 100 licensed databases through the Databases page of its website.

Remote Access and Library Privileges

The Research Medical Library is a member of the Texas Health Science Libraries Consortium (THSLC), which includes the major University of Texas component libraries in the Medical Center and of UTMB in Galveston. Registering for library privileges with one library provides borrowing privileges at all members of the consortium. The libraries share an online catalog of their collections, and users can search the collections of all of the libraries at one time.

Most Research Medical Library services, such as remote access or requesting a copy of an article through document delivery (ILLiad) may be accessed using the M. D. Anderson login credentials. Students who do not have an MD Anderson "MyID" login may register for an account by calling the Research Medical Library at (713) 792-2282 or writing to mRML-Help@mdanderson.org.

Library Classes

The library offers free classes throughout the year on many topics of scholarly utility. These are described here: http://www3.mdanderson.org/library/education/index.html.

MD ANDERSON CREATIVE SERVICES (FORMERLY MEDICAL GRAPHICS & PHOTOGRAPHY)

Hours and Phone

Monday – Friday 8:00 am to 5:00 pm
Client Service: (713) 792-6734 *(Yellow Zone)*

Location: Yellow Zone, Room Y2.5724

Main Website: http://inside.mdanderson.org/departments/medical-graphics/index.html

About Creative Services

Creative Services, formerly UT Television and Medical Graphics & Photography, is a fee-for-service department located on The University of Texas MD Anderson Cancer Center campus. Our many services include video production, medical and general photography, graphic design, medical illustration, poster printing, special awards and full-service framing. As brand ambassadors for MD Anderson, we'll make sure that everything we create follows the brand standards for the institution.

Our services are available to MD Anderson, the University of Texas System and other health, education and research related institutions primarily located in the Texas Medical Center.

Online Templates

- Scientific Poster Templates for PowerPoint and Illustrator and many other helpful hints can be obtained from the MD Anderson Brand Central site at: https://mdabrandcentral.com/site/login
- If you use their poster templates, consider replacing the stock photograph (which is typically of a building) with an illustration that is germane to your research group or project.

MD ANDERSON OMBUDS OFFICE

Phone: (713) 792-4896

Location: Pickens Academic Tower (FCT10.5081), 1400 Pressler Drive

Website: http://www.mdanderson.org/about-us/for-employees/employee-resources/ombuds-office/index.html

About the Ombuds Office *(from the Ombuds web page)*

> *"The MD Anderson Ombuds Office provides a confidential, impartial, independent and informal process to facilitate fair and equitable resolutions to workplace concerns that arise at the MD Anderson Cancer Center. The Ombuds Office takes into consideration the interests of all individuals and the interests of the institution in a given situation. The Ombuds Office serves all members of the MD Anderson workforce, including trainees and fellows, by responding promptly and fairly to concerns, complaints or disputes arising from or affecting their work environment, and by providing a safe place to discuss these issues without fear of retaliation."*

What are some common problems people present to the ombuds?

> *"Any type of conflict in the workplace that an objective third party could clarify or mediate is appropriate. Employees often come to the Ombuds Office to discuss interpersonal misunderstandings, feelings of abuse of power or disagreements about policy, procedure or career concerns. People often visit the Ombuds Office when they are not sure where to go, or where to seek guidance, or how to address the problem, or what options are available. The Ombuds Office is a good place to discuss a sensitive question or issue. For example: Difficult work relationships; Perceived unfair treatment; Management problems." "What about confidentiality? Confidentiality is respected and protected so that individuals can freely clarify their problems without fear of retribution or loss of standing with friends, peers or supervisor."*
>
> Visit their website to learn more about their confidentiality policy and their services.

MD ANDERSON EMPLOYEE ASSISTANCE PROGRAM (EAP)

Phone: (713) 745-6901

Hours: 8:00 am to 5:00 pm

After Hours Urgent Calls: (281) 537-7445 or (800) 848-4641. Say that you are an MD Anderson student, employee or dependent and ask to speak to the on-call EAP counselor.

Website: http://inside.mdanderson.org/humanresources/working-at-md-anderson/employee-resources/employee-assistance-program.html

About the EAP Program *(edited from the EAP web page 8/20/15)*

MD Anderson's Employee Assistance Program (EAP) contributes to a healthier and more productive work environment by assisting employees and their families with problems that affect their lives both on and off the job. Any employee, faculty member, designated trainee, student or retiree is eligible to use EAP services at no cost. Immediate family members of employees and faculty are also eligible to benefit from these same services at no cost.

EAP SERVICES

Consult with the EAP when any of these apply:

- **Work-Related** - Conflicts with coworkers, career worries, adapting to new circumstances, communicating with supervisors, feeling "burned out" with current job.
- **Personal** - Worried, anxious, fearful, irritable or sad much of the time; dealing with a major life decision; having difficulty managing responsibilities; trouble with concentrating, staying focused; dealing with the loss of a loved one; concerned about the use of alcohol or drugs; needing help with addictive behaviors; challenged with new circumstances; looking for a mental health care provider.
- **Family and Relationships** - Marital or relationship issues, domestic conflict or abusive relationships, family illness, financial worries, parent-child concerns, teenage and childhood behavioral problems.
- **Legal Issues** - Divorce, child custody, juvenile, child support, consumer law, property, elder law, immigration law, wills, estate planning, probate, criminal, bankruptcy, personal injury, traffic, litigation, contracts.

Confidentiality *(from the EAP web page 8/20/15)*

> *"EAP information is kept strictly confidential, consistent with applicable laws and professional standards. In the case of a self-referral or supervisor-suggested referral, information is not released to anyone without the authorized consent of the client. In the case of a formal supervisor referral, the EAP notifies the supervisor to confirm only whether or not the employee has contacted the EAP and whether recommendations have been followed."*

UT STUDENT HEALTH AND COUNSELING SERVICES

Phone: (713) 500-5171 or (713)500-5173 after 5 p.m.

Hours: Monday-Friday, 9 a.m. to 4:30 p.m.

Counseling Website: https://www.uth.edu/studenthealth/

UT Student Health and Counseling Services provides mental health, psychiatry and psychological counseling.

Please visit their website to learn more about their services. To schedule an appointment, call (713) 500-5171.

UNIVERSITY OF TEXAS POLICE DEPARTMENT

Non-Emergencies: (713) 792-2890

Emergencies: 911

Website: http://www.mdanderson.org/utpd/index.html

The University of Texas at Houston Police Department (UT Police) provides law enforcement and community services to the MD Anderson Cancer Center and UT Health Science Center at Houston institutions.

PARKING, METRO AND UT SHUTTLE SERVICE

PARKING

Parking options vary depending on distance and cost. For up-to-date information, it is best to check the GSBS, UTHSC, or MD Anderson websites. Note that different lots and garages are owned and managed by different entities and thus have different rules and different deals such as after-hours parking in affiliated facilities.

GSBS: https://gsbs.uth.edu/current-students/student-life/parking-and-transportation.htm

UTHSC – Auxiliary Enterprises: http://www.uth.edu/parking/index.htm

MD Anderson: http://inside.mdanderson.org/departments/facilities/getting-around/parking.html

After Hours Student Parking - $30.00 per Semester or more, depending upon the location

You must have a UT student ID to purchase a tag. For more information, go to the Auxiliary Services website:

http://www.uth.edu/parking/parking/StudentParkingPolicy-rev.pdf or call (713)500-3405

After Hours Parking in the Commons Waterfall Garage #15

After hours, reduced-cost parking is available for MD Anderson employees in the Commons waterfall parking garage (TMC garage #15). There are two options:

1. Purchase an "after hours" contract card. This allows you to park in garage #15 Monday through Friday from 4:30 PM to 8:00 AM and 24-hours over the weekend (i.e. from 4:30 PM Friday to 8:00 AM Monday). Note, while you can park until 8:00 AM, you cannot enter the garage after 4:30 AM during the week.

2. If you have a parking contract for the South Extension (Brown) Lot or the Smith Lands lots, then you can park for no added cost in Garage #15 during the same "after hours" as listed under option #1, except that you cannot enter the garage until 6:00 PM Mon-Fri.

Parking in the South Campus Student Lot is $40 a month for 24×7×365 access.

METRO LIGHT RAIL AND BUS INFORMATION

METRO is Houston's bus and light rail service. The regular one-way fare for METRORail or local METRO bus service is $1.25. The student discount of 50% is only valid when you use the METRO "Q" card, which is an electronic card loaded with a pre-paid balance. Fares are automatically deducted from your card each time you ride, just like a debit card. It provides free transfers.

The student Q card application is here: http://www.ridemetro.org/MetroPDFs/Fares/student-fare-brochure.pdf.

MDACC SHUTTLE SERVICE

MDACC provide free shuttle services for students (with ID badge). Hours: 7:30 am to 6:00 pm. There is a smartphone app that allows one to see the locations of the shuttles in real time.

http://inside.mdanderson.org/departments/facilities/getting-around/shuttles.html (Scroll down if the page appears to be largely empty. It does not render well in narrow browsers.)

UTHSC-H SHUTTLE SERVICE

Free shuttle service for students between UT housing and the Texas Medical Center is provided by UTHSC-H. You must present your student ID to ride the bus. Shuttles operate Monday through Friday between 6:00 am and 8:00 pm. The shuttle schedule is posted at: http://www.uth.edu/shuttle/index.htm.

RICE BRC/TMC SHUTTLE SERVICE

The Rice University Transportation Department runs a shuttle bus through the Rice campus and the Texas Medical Center. (BRC stands for the BioScience Research Collaborative, which is located on the southwest corner of Dryden Road and University Boulevard.) There is no charge for our students and faculty members to use it to get to classes and seminars on the Rice Campus. The route and schedule may be found here: https://transportation.rice.edu/schedules/brctmc.

OTHER HANDY RESOURCES

MD Anderson Trainee Resource Guide: http://www.mdanderson.org/education-and-research/education-and-training/trainee-resource-guide/index.html

PROGRAM FACULTY DIRECTORY

Program Faculty Member	Department	Telephone	Office	Email
Peter Balter, PhD	Radiation Physics	713-563-2560	FCT6.5060	pbalter@mdanderson.org
James Bankson, PhD	Imaging Physics	713-792-4273	3SCR2.3608	jbankson@mdanderson.org
Sam Beddar, PhD	Radiation Physics	713-563-2609	FCT6.5030	abeddar@mdanderson.org
Kristy Brock, PhD	Imaging Physics	713-794-4962	FCT14.6048	kkbrock@mdanderson.org
Thomas Buchholz, MD	EVP Office	713-563-2335	FCT18.6038	tbuchhol@mdanderson.org
Sang Hyun Cho, PhD	Radiation Physics	713-792-5864	FCT8.6026	scho@mdanderson.org
Dianna Cody, PhD	Imaging Physics	713-563-2712	FCT14.6074	dcody@mdanderson.org
Laurence Court, PhD	Radiation Physics	713-563-2546	FCT8.6014	lecourt@mdanderson.org
William Erwin, MS	Imaging Physics	713-794-4256	CPB5.3319	werwin@mdanderson.org
David Followill, PhD	Radiation Physics	713-745-8989	ERD1.325	dfollowi@mdanderson.org
David Fuentes, PhD	Imaging Physics	713-745-3377	3SCR2.3816	dtfuentes@mdanderson.org
Kent Gifford, PhD	Radiation Physics	713-563-2596	FCT8.5076	kagifford@mdanderson.org
John Hazle, PhD	Imaging Physics	713-792-0612	FCT14.6044	jhazle@mdanderson.org
Rebecca Howell, PhD	Radiation Physics	713-745-8762	ERD1.208	rhowell@mdanderson.org
Geoffrey Ibbott, PhD	Radiation Physics	713-745-0401	FCT6.6064	gibbott@mdanderson.org
A. Kyle Jones, PhD	Imaging Physics	713-563-0552	FCT14.5026	kyle.jones@mdanderson.org
S. Cheenu Kappadath, PhD	Imaging Physics	713-745-2835	CPB5.3309	skappadath@mdanderson.org
Stephen Kry, PhD	Radiation Physics	713-745-8939	ERD1.324	sfkry@mdanderson.org
Rajat Kudchadker, PhD	Radiation Physics	713-563-2538	FCT8.6020	rkudchad@mdanderson.org
Xinming Liu, PhD	Imaging Physics	713-745-2834	FCT14.6094	xliu@mdanderson.org
Jingfei Ma, PhD	Imaging Physics	713-563-2713	FCT14.6086	jma@mdanderson.org
Mary Martel, PhD	Radiation Physics	713-563-2530	FCT8.6042	mmartel@mdanderson.org
Osama Mawlawi, PhD	Imaging Physics	713-563-2711	CPB5.3321	omawlawi@mdanderson.org
Adam Melancon, PhD	Radiation Physics	713-563-2476	FCT8.5082	amelanco@mdanderson.org
Steven Millward, PhD	Cancer Systems Imaging	713-792-5227	3SCR4.3624	smillward@mdanderson.org
Radhe Mohan, PhD	Radiation Physics	713-563-2505	FCT8.6072	rmohan@mdanderson.org
Ponnada Narayana, PhD	UTHealth Radiology	713-500-7677	MSE R 172	ponnada.a.narayana@uth.tmc.edu
Tinsu Pan, PhD	Imaging Physics	713-563-2714	CPB5.3327	tpan@mdanderson.org
Julianne Pollard-Larkin, PhD	Radiation Physics	713-563-2591	FCT6.5048	jmpollard@mdanderson.org
Donna Reeve, MS	Imaging Physics	713-563-2719	FCT14.5018	dmreeve@mdanderson.org
John Rong, PhD	Imaging Physics	713-745-1365	FCT14.5020	john.rong@mdanderson.org
Narayan Sahoo, PhD	Radiation Physics	713-563-2551	PTC1.2071	nsahoo@mdanderson.org
Mohammad Salehpour, PhD	Radiation Physics	713-563-2636	FCT8.6004	msalehpour@mdanderson.org
Gabriel Sawakuchi, PhD	Radiation Physics	713-794-4034	FCT6.5104	gsawakuchi@mdanderson.org
Jason Stafford, PhD	Imaging Physics	713-563-5082	FCT14.6076	jstafford@mdanderson.org
George Starkschall, PhD	Radiation Physics	713-563-2537	FCT6.5056	gstarksc@mdanderson.org
Ramesh Tailor, PhD	Radiation Physics	713-563-2638	FCT8.6068	rtailor@mdanderson.org
Uwe Titt, PhD	Radiation Physics	713-563-2558	FCT8.5087	utitt@mdanderson.org
Oleg Vassiliev, PhD	Radiation Physics	713-745-7995	FCT8.5081	onvassil@mdanderson.org
Jihong Wang, PhD	Radiation Physics	713-563-2531	FCT6.5018	jihong.wang@mdanderson.org
Richard Wendt, PhD	Imaging Physics	713-745-3250	CBP5.3335	rwendt@mdanderson.org
Charles Willis, PhD	Imaging Physics	713-563-2721	FCT14.5024	chwillis@mdanderson.org
Shouhao Zhou, PhD	Biostatistics	713-745-8808	FCT4.6089	szhou@mdanderson.org
X. Ronald Zhu, PhD	Radiation Physics	713-563-2553	PTCB.2046	xrzhu@mdanderson.org

PROGRAM ASSOCIATES DIRECTORY

Program Associate	Department	Telephone	Office	Email
Paola Alvarez, MS	Radiation Physics	713-745-8989	ERD1.316	palvarez@mdanderson.org
Richard Bouchard, PhD	Imaging Physics	713-745-0626	3SCR2.3614	rrbouchard@mdanderson.org
Tina Briere, PhD	Radiation Physics	713-563-2565	FCT8.6084	tmbriere@mdanderson.org
Erik Cressman, MD, PhD	Intervent. Radiol.	713-792-8290	FCT14.6012	ecressman@mdanderson.org
Vittorio Cristini, PhD	Imaging Physics	713-482-2315	3SCR6.4644	vittorio.cristini@uth.tmc.edu
Weiliang Du, PhD	Radiation Physics	713-745-7054	FCT8.6018	wdu@mdanderson.org
Mary C. Farach-Carson, PhD	Dentistry	713-486-4438	BBS-4220	Mary.C.FarachCarson@uth.tmc.edu
William R. Geiser, MS	Imaging Physics	713-745-0333	CPB5.3350	wgeiser@mdanderson.org
Dustin Gress, MS	Imaging Physics	713-792-6413	CPB5.3315	dgress@mdanderson.org
Fada Guan, PhD	Radiation Physics	713-563-1772	FCT8.5084	fguan@mdanderson.org
Ping Hou, PhD	Imaging Physics	713-792-0241	FCT14.5030	ping.hou@mdanderson.org
Sunil Krishnan, MD	Radiation Oncol.	713-563-2301	Y6.6006a	skrishnan@mdanderson.org
Ann Lawyer, MS	Radiation Physics	713-563-2611	FCT8.6010	alawyer@mdanderson.org
Rick Layman, PhD	Imaging Physics	832-750-1448	FCT14.5024	rrlayman@mdanderson.org
Jessica Leif, MS	Radiation Physics	713-745-8989	ERD1.313	jlowenst@mdanderson.org
Heng Li, PhD	Radiation Physics	713-563-2572	PTC1.2075	hengli@mdanderson.org
Ho-Ling Anthony Liu, PhD	Imaging Physics	713-563-7383	FCT14.6078	hlaliu@mdanderson.org
Dershan Luo, PhD	Radiation Physics	713-563-2549	FCT8.5010	dluo@mdanderson.org
Dennis Mackin, PhD	Radiation Physics	713-745-1642	FCT8.5085	dsmackin@mdanderson.org
Marites "Tess" Melancon, PhD	Intervent. Radiol.	713-794-5387	FCT14.6002	mmelancon@mdanderson.org
Raymond Meyn, PhD	Exp. Rad. Oncol.	713-792-7328	Z7.3028	rmeyn@mdanderson.org
Dragan Mirkovic, PhD	Radiation Physics	713-563-2643	FCT8.5085	dmirkovi@mdanderson.org
Paige Nitsch, MS	Radiation Physics	713-563-2544	FCT6.5066	plnitsch@mdanderson.org
Ramaswamy Sadagopan, MS	Radiation Physics	713-563-2539	FCT6.5064	rsadagop@mdanderson.org
Konstantin Sokolov, PhD	Imaging Physics	713-745-0620	3SCR2.3606	ksokolov@mdanderson.org
Paige Taylor, MS	Radiation Physics	713-745-8984	ERD1.314	pataylor@mdanderson.org
Sastry Vedam, PhD	Radiation Physics	713-792-0383	FCT8.6008	svedam@mdanderson.org
Aradhana Venkatesan, MD	Diag. Radiology	713-563-8880	FCT15.6074	avenkatesan@mdanderson.org
Zhifei Wen, PhD	Radiation Physics	713-563-2557	FCT8.5014	zwen@mdanderson.org
James Yang, PhD	Radiation Physics	713-563-0164	FCT8.5016	jamesyang@mdanderson.org
Jinzhong Yang, PhD	Radiation Physics	713-792-2814	FCT8.5089	jyang4@mdanderson.org

PROGRAM STEERING COMMITTEE

Faculty Member	Position	Telephone	Office	Email
Richard Wendt, PhD	Director	713-745-3250	CBP5.3335	rwendt@mdanderson.org
Rebecca Howell, PhD	Deputy Director	713-745-8762	ERD1.208	rhowell@mdanderson.org
Laurence Court, PhD	Admissions Director	713-563-2546	FCT8.6014	lecourt@mdanderson.org
Stephen Kry, PhD	#1, Radiation Physics	713-745-8939	ERD1.324	sfkry@mdanderson.org
S. Cheenu Kappadath, PhD	#2, Nuclear Medicine	713-745-2835	CPB5.3309	skappadath@mdanderson.org
	#3, Imaging Physics			
Christine Peterson, PhD	#4, External	713-563-7560	FCT4.6026	cbpeterson@mdanderson.org
Wendy Woodward, MD, PhD	#5, Non-Medical Physics	713-563-2300	FCT6.6072	wwoodward@mdandrson.org
A. Kyle Jones, PhD	#6, Imaging Physics	713-563-0552	FCT14.5026	kyle.jones@mdanderson.org
Julianne Pollard-Larkin, PhD	#7, Radiation Physics	713-563-2591	FCT6.5048	jmpollard@mdanderson.org
George Starkschall, PhD	Special Representative	713-563-2537	FCT6.5055	gstarksc@mdanderson.org

MEDICAL PHYSICS CANDIDACY EXAMINATION COMMITTEE

Faculty Member	Specialty	Telephone	Office	Email
Jason Stafford, PhD	Imaging Physics	713-563-5082	FCT14.6076	jstafford@mdanderson.org
David Followill, PhD	Radiation Physics	713-745-8989	ERD1.325	dfollowi@mdanderson.org
S. Cheenu Kappadath, PhD	Imaging Physics	713-745-2835	CPB5.3325	skappadath@mdanderson.org
Stephen Kry, PhD	Radiation Physics	713-745-8939	ERD1.324	skry@mdanderson.org

STUDENT DIRECTORY

Student, Degree Program, and Year of Matriculation			Faculty Advisor	Telephone	Office	Email
Maureen Aliru	PhD	2014	Krishnan	713-745-5625	Y6.6096a	maliru@mdanderson.org
Fahed Alsanea	PhD	2014	Beddar	713-563-7774	FCT8.6081	fmalsanea@mdandeson.org
Brian Anderson	PhD	2017	Brock	713-563-9327	FCT14.5019	bmanderson@mdanderson.org
Garrett Baltz	SMS	2016	Howell	713-745-8943	ERD1.319	gbaltz@mdanderson.org
Yasaman Barekatain	PhD	2017	Wendt	713-745-1459	FCT14.5019	ybarekatain@mdanderson.org
Laura Bennett	SMS	2015	Vassilliev	713-792-3814	FCT8.6009	lcbennett@mdanderson.org
Daniela Branco	PhD	2016	Followill	713-563-6291	ERD1.319	dbranco@mdanderson.org
Carlos Cardenas	PhD	2014	Court	713-745-2467	FCT8.6013	cecardenas@mdanderson.org
Mitchell Carroll	PhD	2010	Ibbott	713-745-8073	FCT8.6105	mcarroll1@mdanderson.org
Mallory Carson	PhD	2015	Kry	713-745-8981	ERD1.324	mecarson@mdanderson.org
Daniel Craft	PhD	2013	Howell	713-745-8948	ERD1.319	dfcraft@mdanderson.org
Sharbacha Edward	PhD	2017	Wendt	713-745-5912	FCT14.5019	sedward@mdanderson.org
Kristine Ferrone	PhD	2015	Willis & Kry	713-792-3838	FCT14.5021	klferrone@mdanderson.org
David Flint	PhD	2014	Sawakuchi	713-794-5023	FCT8.6009	dbflint@mdanderson.org
Evan Gates	PhD	2016	Fuentes	713-792-9904	3SCR2.3611	egates1@mdanderson.org
Rachel Ger	PhD	2014	Court	713-792-3842	FCT8.6013	rbger@mdanderson.org
Joshua Gray	PhD	2013	S. Millward	713-745-4025	3SCR4.4803	jpgray@mdanderson.org
Shannon Hartzell	SMS	2017	Wendt	713-792-3843	FCT14.5019	shartzell@mdanderson.org
Yulun He	PhD	2017	Wendt	713-745-1873	FCT14.5019	yhe5@mdanderson.org
Megan Jacobsen	PhD	2012	Cody	713-794-4055	3SCR2.3623	mcjacobsen@mdanderson.org
Kelly Kisling	PhD	2015	Court	713-745-8835	FCT8.6013	kdkisling@mdanderson.org
Benjamin Lopez	PhD	2015	Mawlawi	713-745-3647	CPB5.3324	bplopez@mdanderson.org
Brandon Luckett	SMS	2017	Wendt	713-563-3405	FCT14.5019	bluckett@mdanderson.org
Rachel McCarroll	PhD	2013	Court	713-563-2593	FCT8.6013	remccarroll@mdanderson.org
Brigid McDonald	PhD	2016	Wendt	713-792-3848	FCT14.5019	bmcdonald@mdanderson.org
Joseph Meier	PhD	2014	Mawlawi	713-563-2474	CPB5.3301	jgmeier@mdanderson.org
Keith Michel	PhD	2015	Bankson	713-792-9904	3SCR2.3611	kamichel@mdanderson.org
Trevor Mitcham	PhD	2014	Bouchard	713-745-2045	3SCR2.3805	tmmitcham@mdanderson.org
Drew Mitchell	PhD	2013	Fuentes	713-745-8543	3SCR2.3611	dmitchell2@mdanderson.org
Benjamin Musall	PhD	2017	Ma	713-792-3870	FCT14.6081	bcmusall@mdanderson.org
Tucker Netherton	PhD	2016	Court	713-792-5742	FCT8.6013	tnetherton@mdanderson.org
Mark Newpower	PhD	2015	Mohan	713-745-3677	FCT8.6059	manewpower@mdanderson.org
Constance Owens	PhD	2015	Court	713-745-3679	FCT8.6013	caowens@mdanderson.org
Mary Peters	SMS	2016	Howell	713-563-3405	FCT8.6013	mpeters1@mdanderson.org
Saleh Ramezani	PhD	2015	Beddar	713-745-1872	FCT8.6081	sramezani@mdanderson.org
Dong Joo Rhee	PhD	2017	Wendt	713-792-3845	FCT14.5019	drhee1@mdanderson.org
Travis Salzillo	PhD	2014	Bhattacharya	713-792-2177	3SCR4.4803	tcsalzillo@mdanderson.org
Jeremiah Sanders	PhD	2016	Ma	713-563-9327	FCT14.6081	jsanders1@mdanderson.org
Angela Steinmann	PhD	2013	Followill	713-745-8976	ERD1.319	asteinmann@mdanderson.org
Emily Thompson	PhD	2016	Cressman	713-792-2230	FCT14.5019	ethompson@mdanderson.org
Sara Thrower	PhD	2013	Hazle	713-745-2656	3SCR2.3611	slloupot@mdanderson.org
Cayla Wood	PhD	2015	Bouchard	713-563-2597	3SCR2.3623	cawood@mdanderson.org

ALUMNI – SPECIALIZED MASTER OF SCIENCE

S.M.S. Graduate	Year	Thesis	Advisor
Ronald W. Cowart	1976	An Investigation of the Inverse Pinhole Camera	Alfonso Zermeno, PhD
Mina Behmard	1977	Displacement Correction Factors for High Energy X-rays	Peter R. Almond, PhD
Charles A. Wissuchek	1978	Spectrum Measurement in Diagnostic X-ray: A New Technique	Alfonso Zermeno, PhD
Richard H. Stark	1979	Design and Use of Zero Replacement Tissue Equivalent and Air Equivalent Ionization Chambers	William F. Gagnon, PhD
Jeffrey A. Meyer	1979	A Rational Modulation Transfer Function in Medical Imaging	Alfonso Zermeno, PhD
Marcia D. Sage	1979	The Effect of the Characteristic Curve Shape in the Determination of the Line Spread Function and the Modulation Transfer Function of Radiographic Film-Screen Systems	Arthur G. Haus, PhD
Kanayo E. Ubesie	1981	Ion Collection Efficiency Determinations for Cylindrical Ionization Chambers Irradiated with Scanned Electron Beams	William F. Hanson, PhD
Stephen H. Mahood	1982	Evaluation of High Energy X-ray Replacement Factors for Cylindrical Ionization Chambers	Peter R. Almond, PhD
Chirapha Tannanonta	1982	Investigation of Neutrons Inside and Outside of the X-ray Beam Produced by Linear Accelerators	Robert J. Shalek, PhD
Connel Chu	1983	Evaluation of the Thermoluminescent Characteristics of Neutron Insensitive Lithium Borate and Lithium Fluoride on Therapeutic Heavy Charged Particle Beams	Kenneth R. Hogstrom, PhD
Alex M. Hashemi	1986	Determination of Exposure Rate Constant for a New Design I-125 Seed	Michael D. Mills, PhD
Richard N. Umeh	1986	Determination of X-ray Beam Quality Changes of Linear Accelerator from Ionization Measurements in Phantom	William F. Hanson, PhD
Charles M. Able	1987	Evaluation of the MDACC Total Scalp Electron Irradiation Technique	Michael D. Mills, PhD
Min Jing	1987	Calculation of Cobalt-60 Dose Distributions using Fast Fourier Transforms	Arthur L. Boyer, PhD
Pei-Fong Wong	1987	Comparison of Electron Beam Depth-Dose and Off-Axis Profile Measured with Various Detectors in Water and Plastic	William F. Hanson, PhD
R. Cole Robinson	1989	Energy Response of LiF TLD-100 to High Energy Photon Beams	Thomas H. Kirby, PhD
Ramaswamy J. Sadagopan	1989	Application of a Laplace Transform Pair Model to Deconvolve High Energy Photon Spectra from Transmission Measurements	William F. Hanson, PhD
Gregory S. Dominiak	1991	Dose in Spinal Cord Following Electron Irradiation	George Starkschall, PhD

S.M.S. Graduate	Year	Thesis	Advisor
Scott M. Jones	1991	The Application of FFT-Based Correlation to Digital Portal Images	Arthur L. Boyer, PhD
Qamar U. Zaman	1991	Determination of Perturbation Correction Factor for Cylindrical Chambers in an Electron Beam	William F. Hanson, PhD
James M. Bruno	1992	Differentiation Between Calcium Hydroxyapatite and Calcium Oxalate Microcalcifications on a Mammogram Based on Their Imaging Properties: A Phantom Study	Jose A. Bencomo, PhD
Michael J. Gazda	1992	Response of the Lacrimal Gland to Single Doses of Radiation: A Time and Dose Study	Timothy E. Schulltheiss, PhD
Laurie F. Hefner	1992	Single Field Depth Characteristics Measured using Ferrous Sulphate Gels and MRI: A Comparison with Film and Ion Chamber Measurements	John D. Hazle, PhD
Sergio D. Ballester	1993	Two Models for Estimating Maximum Spinal Cord Dose for Long Irradiation Treatments	William F. Hanson, PhD
Maria N. Graves	1993	Evaluation of ICRU Interstitial Implant Doses: Central and Peripheral Dose	William F. Hanson, PhD
George E. Merk	1993	The Application of ROC Analysis in Comparing Detection Ability of Portal image Localization Errors	Arthur L. Boyer, PhD
Edward R. Bawiec	1994	Quality Assurance of Electron Bolus	George Starkschall, PhD
Twyla R. Willoughby	1994	Application of a Neural Network in Evaluating and Optimizing Three-Dimensional Treatment Plans	George Starkschall, PhD
E. Joe Grant	1994	A Triple Energy Window Method for In Vivo Quantization of Iodine-131 from Anger Camera Images	Daniel J. Macey, PhD
Timothy J. Waldron	1995	Calculation of Dynamically-Wedged Isodose Distribution from Segmented Treatment Tables and Open-Field Measurements	Arthur L. Boyer, PhD
Robert Praeder	1995	Prediction of Electron Beam Output Factors using a Pencil Beam Model with Two Gaussian Components	Almon S. Shiu, PhD
Peter A. Balter	1995	The Development of a Mailable Phantom for Remote Monitoring of Stereotactic Radiosurgery	William F. Hanson, PhD
Sarah A. Danielson	1996	MR Image Segmentation of Tumor and Necrosis in Soft-Tissue Sarcomas	Edward F. Jackson, PhD
Dena McCown Richards	1996	Acquisition, Processing and Display of Helical X-ray Computed Tomography Angiogram	John D. Hazle, PhD
Kyle J. Antes	1996	Comparison of Miniature Multileaf Collimation (MMLC) with Circular Collimation for Stereotactic Radiosurgery and Radiotherapy	Almon S. Shiu, PhD
Stephen K. Thompson	1996	Performance Analysis of a Lossy Compression Algorithm for Radiology Based on Cubic Spline Wavelets	John D. Hazle, PhD

S.M.S. Graduate	Year	Thesis	Advisor
Donna M. Reeve	1997	Pharmacokinetic Model Parameter Estimation for Brain Lesions using Dynamic Keyhole Fast Spin-Echo MR Imaging	Edward F. Jackson, PhD
Victor L. Howard	1997	Study of Distortions in Radiotherapy Simulator Fluoroscopic Images	Isaac I. Rosen, PhD
Matthew K. Vossler	1998	A Comparison of the Photon Energy Spectra of Several Radiotherapy Linear Accelerators	William F. Hanson, PhD
Jonathan M. Dugan	1998	Computer Modeling of a Photostimulable Phosphor Digital Imaging Device	Douglas Tucker, PhD
Teresa A. Fischer	1998	Retrospective Analysis of Lung Fibrosis Following Radiation and Chemotherapy for Lung Cancer	Isaac I. Rosen, PhD
Russell B. Tarver	1998	Wavelet Compression of Simulated Computed Tomography Images	John D. Hazle, PhD
Michael R. Bieda	1999	A Monte Carlo Method for Commissioning Electron Beams	John A. Antolak, PhD
Chris Baird	2000	Dosimetry of Large-Breasted Patients Utilizing Compensators	George Starkschall, PhD
Luke McLemore	2000	Dosimetric Characterization of a Palladium-103 Implanted Stent for Intravascular Brachytherapy	John L. Horton, PhD
Michael Lemacks	2000	Two Methods for Improving the Detectability of Microcalcifications in Digital Mammography	Chris C. Shaw, PhD
Dee-Ann Radford	2001	A Standardized Method of Quality Assurance for Intensity Modulated Radiation Therapy of the Prostate	David S. Followill, PhD
Amanda Krintz	2002	A Re-analysis of the Collaborative Ocular Melanoma Study Medium Tumor Trial Eye Plaque Dosimetry	David S. Followill, PhD
Christopher Cherry	2002	A Heterogeneous Thorax Phantom for Remote Verification of Three-Dimensional Conformal Radiotherapy	William F. Hanson, PhD
Laura Butler	2002	Dosimetric Benefit of Respiratory Gating	George Starkschall, PhD
Nicholas C. Koch	2002	Assessment of Respiratory Motion for Radiation Therapy of Lung Cancer Using Magnetic Resonance Imaging	H. Helen Liu, PhD
Jennifer C. O'Daniel	2002	The Delivery of IMRT with a Single Physical Modulator for Multiple Fields: A Feasibility Study for Prostate and Paranasal Sinus Cancers	Lei Dong, PhD
Michael Beach	2003	Implementation of a Polymer Gel Dosimetry Insert for an Anthropomorphic Phantom Used to Evaluate Head and Neck Intensity-Modulated Radiation Therapy	Geoffrey S. Ibbott, PhD
Pai-Chun Melinda Chi	2005	A Three-Dimensional Pencil-Beam Redefinition Algorithm for Electron Arc Therapy	Kenneth R. Hogstrom, PhD

S.M.S. Graduate	Year	Thesis	Advisor
Gary Fisher	2005	The Accuracy of 3-D Inhomogeneity Photon Algorithms in Commercial Treatment Planning Systems using a Heterogeneous Lung Phantom	David S. Followill, PhD
Jackeline Santiago Estaban	2005	Energy Dependence of a New TLD-100 System for Characterizing Low Energy Brachytherapy Sources	Geoffrey S. Ibbott, PhD
Claire Therese Nerbun	2005	Analysis of MD-55-2 Gafchromic® Film as a Dosimetry Audit System for Proton Therapy	David S. Followill, PhD
Hilary Loupee Vass	2005	Comparison of the Microskeleton PDR ^{192}Ir Source to Traditional LDR ^{137}Cs for Treating Gynecological Cancers in a 10 Patient Monte Carlo Study	Geoffrey S. Ibbott, PhD
Kenneth L. Homann	2005	Evaluation of the Dose within the Abutment Region between Tangential and Supraclavicular Fields for Various Breast Irradiation Techniques	Karl Prado, PhD
Scott Davidson	2006	Heterogeneity Dose Calculation Algorithm Accuracy in IMRT using Anthropomorphic Thorax Phantom	David S. Followill, PhD
Earl Gates	2006	The Dosimetric Impact of IMRT on Out-of-Field Structures in the Treatment of the Intact Breast: A Companion to Forward-Planned Techniques	Mohammad Salehpour, PhD
Ryan Hecox	2006	Dose Calculation Accuracy in the Presence of High-Z Material using Megavoltage CT for Treatment Planning	Geoffrey S. Ibbott, PhD
Michael Bligh	2006	Implementation of Quantitative Computed Tomography on Multi-Slice Computed Tomography Scanners	Dianna Cody, PhD
Blake Cannon	2006	Quantitative Diffusion and Fat Imaging of Vertebral Compression Fractures	Jingfei Ma, PhD
Alanna McDermott	2007	Validating Pediatric CT Surface and Organ Doses Predicted by Monte Carlo Simulations using Point Dosimetric Measurements	Dianna Cody, PhD
Paige Nitsch	2007	Assessment of CyberKnife's Heterogeneity Dose Calculation Algorithm and Respiratory Tracking System using an Anthropomorphic Thorax Phantom	Geoffrey S. Ibbott, PhD
Susannah Lazar	2007	Risk of Secondary Fatal Malignancies from Hi-Art Tomotherapy IMRT	David S. Followill, PhD
Renee Dickinson	2007	Technical Improvement of Lymphoscintigraphy	Richard E. Wendt III, PhD
Jimmy Jones	2008	Study of the Radiation Damage to Plastic Scintillating Fibers and Optical Fibers	A. Sam Beddar, PhD
Maria Bellon	2008	Evaluation of Aluminum-Oxide (Al_2O_3:C) Optically Stimulated Luminescence (OSL) Dosimeters as a Potential Alternative to Thermoluminescent Dosimeters (TLDs) for Remote Dosimetry Services	David S. Followill, PhD

S.M.S. Graduate	Year	Thesis	Advisor
Nathan Pung	2008	Validation of a Conversion Method of Low Dose Rate to Pulsed Dose Rate Intracavitary Brachytherapy Prescription for the Treatment of Cervical Carcinoma	Firas Mourtada, PhD
Yevgeney Vinogradskiy	2008	Verification of 4D Dose Calculations	George Starkschall, PhD
John Zullo	2008	Validation of Intensity Modulated Radiation Therapy Point Dose Calculation Accuracy Performed using a Scatter Integration-Based Algorithm	Karl Prado, PhD
Triston Dougall	2009	Optimization of Exposure Factors for Digital Radiography by Means of CdT X-ray Spectroscopy	Charles Willis, PhD
Georgi Georgiev	2009	Comparison of Secondary Doses in Pediatric Patients from Craniospinal Irradiations using Photon, Proton and Electron Spinal Fields	David S. Followill, PhD
Ryan Grant Lafratta	2009	Implementation of an Anthropomorphic Pelvis Phantom for the Evaluation of Proton Therapy Procedures	Geoffrey S. Ibbott, PhD
Katie Hulme	2009	Consideration for Computed Tomography Dose Reduction in ^{99m}Tc SPECT/CT Protocols	S. Cheenu Kappadath, PhD
Joseph Dick	2010	An Implant MOSFET Dosimeter Modified to Act as a Fiducial Marker	Mohammad Salehpour, PhD
David Zamora	2010	Thoracic Target Volume Delineation using Various Maximum-Intensity Projection Computed Tomography Image Sets for Stereotactic Body Radiation Therapy	Tinsu Pan, PhD
James Kerns	2010	Characterization of Optically-Stimulated Luminescent Detectors in Photon and Proton Beams for Use in Anthropomorphic Phantoms	Geoffrey S. Ibbott, PhD
Kelly Kisling	2010	Volumetric Modulated Arc Therapy Evaluation with the Radiological Physics Center Head and Neck Phantom	Rebecca Howell, PhD
Derek Yaldo	2010	Evaluation of the Sensitivity of the Anisotropic Analytical Algorithm (AAA) to the Commissioning Dataset	Rebecca Howell, PhD
Brad Lofton	2010	New Tools for Monitoring Gamma Camera Uniformity	Richard E. Wendt III, PhD
Anthony Blatnica	2011	Modification and Implementation of the RPC Heterogeneous Thorax Phantom for Verification of Proton Therapy Treatment Procedures	Geoffrey S. Ibbott, PhD
Sarah Joy Castillo	2011	Assessment of Collimator Jaw Optimization in Reducing Normal Tissue Irradiation with Intensity Modulated Radiation Therapy	Peter Balter, PhD
Kiley Pulliam	2011	The Clinical Impact of Couch Top and Rails on IMRT and Arc Therapy	Stephen Kry, PhD
Emily Neubauer Sugar	2011	The Effect of Shoulder Variation on IMRT and Smart Arc for Head and Neck Cancer	Stephen Kry, PhD

S.M.S. Graduate	Year	Thesis	Advisor
Jonathon Mueller	2011	In-Vivo CT Dosimetry during Virtual Colonoscopy	Dianna Cody, PhD
Paige Summers Taylor	2011	Development and Implementation of an Anthropomorphic Head Phantom for the Assessment of Proton Therapy Treatment Procedures	Geoffrey S. Ibbott, PhD
Jacqueline Tonigan Faught	2011	Evaluation of Intensity Modulated Radiation Therapy (IMRT) Delivery Error Due to IMRT Treatment Plan Complexity and Improperly Matched Dosimetry Data	David S. Followill, PhD
Roman Repchak	2012	Evaluation of the Effectiveness of AAAA Algorithm in Flattened and Flattening-Filter-Free Beams for the High Energy Lung Dose Delivery using the RPC Lung Phantom	David S. Followill, PhD
Kevin Casey	2012	Development and Implementation of a Remote Audit Tool for High Dose Rate (HDR) ^{192}Ir Brachytherapy using Optical Stimulated Luminescence Dosimetry	David S. Followill, PhD
Jared Ohrt	2012	Comprehensive Calculation-Based IMRT QA using R&V Data, Treatment Records, and a Second Treatment Planning System	Peter Balter, PhD
Jennelle Bergene	2012	Development and Implementation of the Use of Optically Stimulated Luminescent Detectors in the Radiological Physics Center Anthropomorphic Quality Assurance Phantoms	David S. Folllowill, PhD
Michael Silosky	2012	Characterization of the Count Rate Performance and Evaluation of the Effects of High Count Rates on Modern Gamma Cameras	S. Cheenu Kappadath, PhD
Kevin Vredevoogd	2012	Evaluation of Polymer Gel Dosimeters for Measurements of Dose and LET in Proton Beams	Geoffrey S. Ibbott, PhD
Yi Pei Patty Chen	2012	Comparison of Tumor Shrinkage and Cumulative Dose Distribution for Lung Cancers	Laurence E. Court, PhD
James Neihart	2013	Development and Implementation of a Dynamic Heterogeneous Proton Equivalent Anthropomorphic Thorax Phantom for the Assessment of Scanned Proton Beam Therapy	David S. Followill, PhD
Olivia Huang Dawood	2013	Evaluation of PRESAGE® Dosimeters for Brachytherapy Sources and the 3D Dosimetric Characterization of the new AgX100 ^{125}I Seed Model	Geoffrey S. Ibbott, PhD
Christopher Pham	2013	Characterization of OSLDs for Use in Small Field Photon Beam Dosimetry	David S. Followill, PhD
Elizabeth McKenzie	2013	An Evaluation of the Consistency of IMRT Patient QA Techniques	Stephen Kry, PhD

S.M.S. Graduate	Year	Thesis	Advisor
Katherine Dextraze	2013	Renal Cryoablation: Investigation of Periprocedural Visualization Tools and Treatment Response Quantification	Jason Stafford, PhD
Matthew J. S. Wait	2014	Performance Evaluation of Material Decomposition using Rapid kVp-Switching Dual Energy CT for Assessing Bone Mineral Density	S. Cheenu Kappadath, PhD
Ming Jung Mindy Hsieh	2014	Implementation of Upright Treatments for Lung and Head and Neck Cancers	Laurence E. Court, PhD
Jennifer Sierra Irwin	2014	Characterization of the New Xoft Axxent Electronic Brachytherapy Source using PRESAGE®	Geoffrey S. Ibbott, PhD
Dana Lewis	2014	Development and Implementation of an Anthropomorphic Pediatric Spine Phantom for the Assessment of Craniospinal Irradiation Procedures in Proton Therapy	Stephen Kry, PhD
Olivia Popnoe	2015	Feasibility of Using Virtual Unenhanced Images to Replace Pre-Contrast Images in Multiphase Renal CT Exams	A. Kyle Jones, PhD
Mattie McInnis	2015	Assessment of Uncertainty in Planning and Dose Delivery of Proton Therapy in IROC-Houston QA Phantom Due to Variable CT Technique and Proton Energy	David S. Followill, PhD
Daniela Branco	2016	Development and Implementation of an Anthropomorphic Head and Neck Phantom for the Assessment of Proton Therapy Treatment Procedures	David S. Followill, PhD
Harlee Harrison Griffin	2016	An Automated Syringe Pump System for Improving the Reproducibility of Dynamic Hyperpolarized MR Phantoms	James Bankson, PhD
Joseph Weygand	2017	Identifying the Immune-Related Metabolic Properties of Pancreatic Cancer Using Nuclear Magnetic Resonance Spectroscopy and Dynamic Magnetic Resonance Spectroscopic Imaging with Hyperpolarized Pyruvate	Pratip K. Bhattacharya, PhD
Benjamin C. Mussall	2017	Quantitative ADC as an Early Imaging Biomarker of Response to Chemoradiation in Esophageal Cancer	Steven H. Lin, PhD
Brian M. Anderson	2017	Computer-Aided Detection of Pathologically Enlarged Cervical Lymph Nodes with Non-contrast CT	Laurence E. Court, PhD

ALUMNI – MASTER OF SCIENCE

M.S. Graduate	Year	Dissertation	Advisor
Peter Corry	1966	Development of a Scintillation Camera for Visualization of Distributions of Radioactive Isotopes	Arthur Cole, PhD
E. Burnell Hranitzky	1969	Relative Merits of Systems for Measurement of Ion Chamber Current from Radiation Sources	Peter Almond, PhD
Dale Campbell	1971	A Comparison Study of Three RANDO Phantoms and an Absorbed Dose Calculation for Media Containing Air Cavities	Peter Almond, PhD
Kenneth McCray	1971	Investigation of the Energy Dependence and Supralinearity Characteristics of Lithium Fluoride, Calcium Fluoride, and Lithium Borate Thermoluminescent Dosimeters	Peter Almond, PhD
Samuel Hancock	1971	Measurement of Mean Quality Factor by LET Spectroscopy	George Oliver, PhD
Charles Kahlig	1973	A Comparison of Methods Used to Generate Isodose Distributions for Cobalt-60 Radiation	Robert J. Shalek, PhD
Laurence Thomson	1974	Response of a Human Melanoma Cell Line to High LET Radiation	Alfred R. Smith, PhD
L. David Gager	1975	Investigation of Silicon Diode Suitability for Use in Radiological Physics Measurements	Peter Almond, PhD
Steven Rosanky	1975	The Gamma Dose for 50 MEV d>Be Neutrons at Tamvec	Peter Almond, PhD
James R. Marbach	1975	The Effect of Scattered Photons on the 25 MV Photon Beam from a Sagittaire Linear Accelerator	Peter Almond, PhD
Tariq Mian	1975	Effects of Radiation from Radionuclides on Mouse Testis Cells	Marvin Meistrich, PhD
David Ta-Wei Huang	1975	Three-Dimensional Dose Computations for External Beam Radiation Therapy	Robert J. Shalek, PhD
Elwood Armour	1976	The Response of Melanized and Non-Melanized Tissue Culture Cells to Combined Ultrasound and Drug Treatments	Peter Corry, PhD
Amparo Mendez	1977	CA and CE Dependence on the Chamber Wall Material as a Function of Beam Energy	Peter Almond, PhD
Jose Antonio BenComo	1978	The Effect of Reciprocity Law Failure When Determining the Characteristic Curve for Screen Film Systems	Alfonso Zermeno, PhD
Charles Lazarre	1980	A Study of the Efficacy of Stannous Diphosphonates in Labeling Rabbit Erythrocytes with Technetium-99m	Howard Glenn, PhD
Walter Jenkins	1983	Enhancement of Radiation-Induced DNA Strand Breaks in the Normal Tissues of Mice Exposed to Hypoxic Cell Sensitizers	Raymond Meyn, PhD
Steven M. Kirsner	1986	Advanced Radiation Therapy Techniques for Retinoblastoma	Kenneth R. Hogstrom, PhD
Allen D. Green	1991	Modeling of Dual Foil Scattering Systems for Clinical Electron Beams	Kenneth R. Hogstrom, PhD

M.S. Graduate	Year	Dissertation	Advisor
Usman Qazi	1995	Evaluation of a Quadruple Energy Window Scatter Subtraction Algorithm for Anger Camera Imaging	Daniel J. Macey, PhD
Robin L. Kendall	1996	Dose-Escalation Potential of Intensity-Modulated Conformal Therapy for Lung Cancer	Isaac I. Rosen, PhD
Robert A. Boyd	1998	The Effect of Using an Initial Polyenergetic Spectrum with the Electron Pencil-Beam Redefinition Algorithm	Kenneth R. Hogstrom, PhD
Nicholas G. Zacharopoulos	1998	MR Diffusion Tensor Imaging of Normal Human Brain with Selective Tissue Suppression	Ponnada Narayana, PhD
Shannon M. Bragg-Sitton	1999	Assessment of the Reliability and Reproducibility of Functional Magnetic Resonance Imaging for Selected Cognitive Tasks	Edward F. Jackson, PhD
Kent Gifford	2000	Verification of a Commercial Radiation Treatment Planning System	George Starkschall, PhD
Brent C. Parker	2001	Quantification of Uncertainties for PTV Margin Determination in Conformal Stereotactic Radiotherapy of Intracranial Lesions	Almon S. Shiu, PhD
Theodore R. Steger, III	2001	Implementation and Verification of Techniques for Real-Time Analysis and Clinical Distribution of Functional Magnetic Resonance imaging Data	Edward F. Jackson, PhD
Aziz H. Poonawalla	2002	Technical Development and Optimization of Clinical Magnetic Resonance Tractography	X. Joe Zhou, PhD
Rebecca Millman Marsh	2003	Measuring Cell Volume Fraction with High-Resolution Diffusion Weighted Magnetic Resonance Imaging	X. Joe Zhou, PhD
Stephen Kry	2003	Secondary Dose Equivalent from IMRT Treatments	Mohammad Salehpour, PhD
Michael J. Price	2004	Modification of the Pencil-Beam Redefinition Algorithm to Predict Central-Axis Percent Depth Dose for Rectangular Fields	Kenneth R. Hogstrom, PhD
Robert A. Rodgers	2005	Electron Conformal Radiotherapy for Post-Mastectomy Irradiation: A Bolus-Free Multi-Energy, Multi-Segmented Field Algorithm	John A. Antolak, PhD
Malcolm E. Heard	2005	Characterizing Dose Distributions of Brachytherapy Sources Using Normoxic Gel	Geoffrey S. Ibbott, PhD
Jason Shoales	2005	Development of an Independent Audit Device for Remote Verification of 4D Radiotherapy	David S. Followill, PhD
Jonas David Fontenot	2006	Dose per Monitor Unit Determination for Proton Therapy Treatment Portals with and without the Range Compensator	Wayne D. Newhauser, PhD
Adam Melancon	2006	The Dosimetric Impact of Intrafractional Motion on IMRT Treatment of Prostate Cancer	Lei Dong, PhD
Dustin Ragan	2006	Partial Fourier Image Reconstruction for Efficient Water and Fat Separation in MR	Jingfei Ma, PhD

M.S. Graduate	Year	Dissertation	Advisor
Whitney Bivens Warren	2007	Evaluation of Bang® Polymer Gel Dosimeters in Proton Beams	Geoffrey S. Ibbott, PhD
Richard Castillo	2007	CT-Based Pulmonary Compliance Imaging in Rodents	Thomas Guerrero, MD, PhD
William Michael Bradley	2007	Partial Volume Correction of Lung Nodules Using PET/CT	Osama Mawlawi, PhD
Jaclyn Homnick	2008	Evaluation of Aluminum Oxide (Al_2O_3:C) Optically Stimulated Luminescence (OSL) Dosimeters as a Potential Alternative to Thermoluninescent Dosimeters (TLDs) for Remote Dosimetry Services	Geoffrey S. Ibbott, PhD
Annelise Giebeler	2009	Patient-Specific Monitor Unit Determination for Patients Receiving Proton Therapy	Wayne Newhauser, PhD
Douglas Caruthers	2010	Commissioning an Anthropomorphic Spine and Lung Phantom for the Remote Validation of Institutions Participating in RTOG 0631	Geoffrey S. Ibbott, PhD
Adam Springer	2010	Evaluation of the Quantitative Accuracy of a Commercially-Available Positron Emission Mammography Scanner	Osama Mawlawi, PhD
Laura Rechner	2011	Risk of Second Malignant Neoplasms Following Arc Therapy and Volumetric Modulated Arc Therapy for Prostate Cancer	Wayne Newhauser, PhD
Luke Hunter	2013	Radiomics of NSCLC: Quantitative CT Image Feature Characterization and Tumor Shrinkage Prediction	Laurence E. Court, PhD
Gye Won Diane Choi	2016	Measurement of the Electron Return Effect Using Presage Dosimeters	Geoffrey S. Ibbott, PhD

ALUMNI – DOCTOR OF PHILOSOPHY

Ph.D. Graduate	Year	Dissertation	Advisor
Robert Waggener	1966	Induction Sensitivity, Cell Survival Following UV Irradiation and DNA Synthesis in a Synchronized Population of E. Coli FK-12(gamma) Cells: A Dissertation	Robert J. Shalek, PhD
Max Boone	1968	High Energy Electron Dose Perturbations in Regions of Tissue Heterogeneity	Robert J. Shalek, PhD
Alfonso Zermeno	1968	The Radiosensitivity of Synchronized Mammalian Cells to Low-Velocity Electrons	Arthur Cole, PhD
Ann Wright	1970	Kinetics of Catalase Activity in Solution and in a Lipoprotein Complex and the Relative Response to Ionizing Radiation	Peter Almond, PhD
Bhudatt Paliwal	1973	A Comparative Study of the Burlin and Almond Cavity Theories for a Lithium Fluoride Cavity in a Polystyrene Medium for Electron Beams Used in Radiation Therapy	Peter Almond, PhD
Royce Gragg	1974	Response of Chinese Hamster Ovary Cells to Fast Neutron Radiotherapy Beams	Raymond Meyn, PhD
Dwight Glenn	1975	"W" Value for Cyclotron Neutrons	Peter Almond, PhD
James Chien-hua Chu	1978	A Clinical Liquid Ionization Chamber for Mixed Neutron Field Dosimetry	Walter Grant, III, PhD
James R. Marbach	1978	Optimization Parameters for Field Flatness and Central-Axis Depth Dose for Use in Design of Therapy Electron Beam Generators	Peter R. Almond, PhD
Carlos E. de Almeida	1979	Energy and Spectrum Measurements of High Energy Electrons Using a Cerenkov Detector	Peter R. Almond, PhD
Thomas H. Kirby	1980	Origin of Residual Potential in Amorphous Selenium Photoreceptors	Alfonso Zermeno, PhD
Amparo Marles	1981	Comparison of Measurement of Absorbed Dose to Water Using a Water Calorimeter and Ionization Chambers of Clinical Radiotherapy Photon Electron Beams	Peter R. Almond, PhD
Jose A. BenComo	1982	Study of the Effects of Total Modulation Transfer Function Changes on Observer Performance Using Clinical Mammograms	Dennis A. Johnston, PhD
Benjamin R. Archer	1984	A Laplace Transform Pair Model to Determine Bremsstrahlung Spectra from Attenuation Data	Peter R. Almond, PhD
David E. Mellenberg	1985	Measurement of Tumor Blood Flow Following Neutron Irradiation	Kenneth R. Hogstrom, PhD
Patrick M. Stafford	1987	Nuclear Track Detector Material as a Fast Neutron Microdosimeter	Peter R. Almond, PhD
Almon S. Shiu	1988	Three-Dimensional Electron Beam Dose Calculations	Kenneth R. Hogstrom, PhD
John D. Hazle	1989	In Vivo Magnetic Resonance Studies of Experimental Liver Disease: Carbon Tetrachloride Hepatoxicity and Alcohol-Induced Fatty Liver in Rat	Ponnada A. Narayana, PhD
Edward F. Jackson	1990	A Dual Resonance, Image-Guided Volume Localization Technique for Magnetic Resonance Spectroscopy	Ponnada A. Narayana, PhD

Ph.D. Graduate	Year	Dissertation	Advisor
Michael F. Moyers	1991	A Convolution Model for Energy Transport in a Therapeutic Fast Neutron Beam	John L. Horton, PhD
David S. Followill	1991	The Development and Characterization of Two Types of Chronic Responses in Irradiated Mouse Colon	Elizabeth Travis, PhD
John E. Bayouth	1993	Dosimetric Evaluation of Bone Marrow Ablation Using Radionuclide Therapy	Daniel J. Macey, PhD
Huan B. Giap	1994	Development of a SPECT-Based Three-Dimensional Treatment Planner for Radionuclide Therapy with I-131	Daniel J. Macey, PhD
James C. Falconer	1995	Quantitative MRI of Spinal Cord Injury in a Rat Model: Correlative Studies	Ponnada A. Narayana, PhD
Lei Dong	1995	Development of Automated Image Analysis Tools for Verification of Radiotherapy Field Accuracy with an Electronic Portal Imaging Device	Arthur L. Boyer, PhD
Steven P. McCullough	2000	A Novel Treatment Planning Methodology for High Dose ^{166}Ho-DOTMP Therapy in Patients with Multiple Myeloma	Richard E. Wendt III, PhD
Robert A. Boyd	2001	Pencil-Beam Redefinition Algorithm Dose Calculations for Electron Therapy Treatment Planning	Kenneth R. Hogstrom, PhD
R. Jason Stafford	2002	Fast Magnetic Resonance Temperature Imaging for Focused Ultrasound Thermal Therapy	John D. Hazle, PhD
Peter Balter	2003	Imaging Properties of Scanning Equalization Digital Radiography: A Simulation Study	Chris C. Shaw, PhD
Brent C. Parker	2004	Verification of Intensity Modulated Stereotactic Radiotherapy Using Monte Carlo Calculations and EPID Dosimetry	Almon S. Shiu, PhD
Kent A. Gifford	2004	A 3-D CT Assisted Monte Carlo Evaluation of Intracavitary Implants	John L. Horton, PhD
Nathan Childress	2004	The Design and Evaluation of a 2D Verification System for Intensity Modulated Radiotherapy	Isaac I. Rosen, PhD
Theodore R. Steger, III	2004	Investigation of Arterial Spin Labeling MRI for Quantitative Cerebral Blood Flow Measurement	Edward F. Jackson, PhD
Aziz H. Poonawalla	2005	Multiple Gradient Echo Propeller (MGREP): Technical Development and Potential Applications	X. Joe Zhou, PhD
Dawn Cavanaugh	2005	Assessment of Cone Beam Computed Tomography Techniques for Imaging Lung Damage in Mice in Vivo	Dianna Cody, PhD
Nicholas C. Koch	2006	Monte Carlo and Analytical Dose Calculations for Ocular Proton Therapy	Wayne Newhauser, PhD
Jennifer C. O'Daniel	2006	Image-Guided Adaptive Radiotherapy for Prostate and Head-and-Neck Cancers	Lei Dong, PhD
Stephen Kry	2007	The Development and Validation of a Monte Carlo Model for Calculating the Out-of-Field Dose from Radiotherapy Treatments	Mohammad Salehpour, PhD
Rebecca Millman Marsh	2007	Measuring Treatment Response in Irradiated Murine Tumors with Diffusion-Weighted Magnetic Resonance Imaging	John D. Hazle, PhD

Ph.D. Graduate	Year	Dissertation	Advisor
Christopher Nelson	2007	Reduction of Tumor Motion and Setup Uncertainties in the Radiation Therapy of Lung Tumors	George Starkschall, PhD
Pai-Chun Melinda Chi	2007	Thoracic Cancer Imaging with PET/CT in Radiation Oncology	Tinsu Pan, PhD
Rebecca Weinberg	2007	Electron Intensity Modulation for Mixed-Beam Radiation Therapy with an X-ray Multi-Leaf Collimator	John A. Antolak, PhD
Jonas Fontenot	2008	Proton Therapy versus Intensity Modulated X-ray Therapy in the Treatment of Prostate Cancer: Estimating Secondary Cancer Risks	Wayne Newhauser, PhD
Michael J. Price	2008	The Imaging and Dosimetric Capabilities of a CT/MR Suitable Anatomically Adaptive, Shielded Intracavitary Brachytherapy Applicator for the Treatment of Cervical Cancer	Firas Mourtada, PhD
Venkata Mogatadakala	2008	In Vivo Diffusion Tensor Imaging of a Rat Spinal Cord with a Phased Array Coil at 7T	Ponnada A. Narayana, PhD
Malcolm Heard	2009	Identification and Characterization of an Optimal Three-Dimensional Dosimetry System for Remote Auditing by the RPC	Geoffrey S. Ibbott, PhD
Dustin Ragan	2010	Measurements of the Vascular Input Function in Mice for DCE-MRI	James Bankson, PhD
Adam Melancon	2010	Range Adaptive Proton Therapy for Prostate Cancer	Lei Dong, PhD
Adam Riegel	2010	Thoracic Radiotherapy Treatment Planning with Cine PET/CT	Tinsu Pan, PhD
Blake Cannon	2010	Improving Quantitative Treatment Response with Deformable Image Registration	Lei Dong, PhD
Brian Taylor	2010	Dynamic Chemical Shift imaging for Usage-Guided Thermal Therapy	R. Jason Stafford, PhD
Scott Davidson	2010	Benchmarking and Implementation of a New Independent Monte Carlo Dose Calculation Quality Assurance Audit Tool for Clinical Trials	David S. Followill, PhD
Ming Yang	2011	Dual Energy Computer Tomography for Proton Therapy Treatment Planning	Lei Dong, PhD
Rui Zhang	2011	Quantitative Comparison of Late Effects Following Photon versus Proton External-Beam Radiation Therapies: Toward an Evidence-Based Approach for Selecting a Treatment Modality	Wayne Newhauser, PhD
Richard Castillo	2011	Evaluation of Deformable Image Registration for Improved 4D CT-Derived Ventilation for Image-Guided Radiotherapy	Thomas Guerrero, MD, PhD
Yevgeney Vinogradskiy	2011	Improving the Accuracy of Radiation Pneumonitis Dose Response Model	Mary Martel, PhD
Annelise Giebeler	2011	The Role of Cell Sterilization in Population-Based Studies of Radiogenic Second Cancers Following Radiation Therapy	Wayne Newhauser, PhD
Yoshi Tsunashima	2011	Verification of Clinical Implementation of Respiratory-Gated Beam Delivery Technique with Synchrotron-Based Proton Irradiation	X. Ronald Zhu, PhD

Ph.D. Graduate	Year	Dissertation	Advisor
Cheuk Kai Becket Hui	2012	Improved Techniques for Acquisition and Analysis of Dynamic Contrast-Enhanced Magnetic Resonance Imaging for Detecting Vascular Permeability in the Central Nervous System	Ponnada A. Narayana, PhD
Vaibhav Juneja	2012	Novel Phantoms and Post-Processing for Diffusion Spectrum Imaging	Ponnada A. Narayana, PhD
Sarah Scarboro	2012	Understanding the Influence of Photon Energy on 6 MV Non-Reference Dosimetry Using TLD and OSLD	Stephen Kry, PhD
Chad Bircher	2012	Design, Calibration and Evaluation of Depth-of-Interaction-Capable PET Detector Modules	Yiping Shao, PhD
Moiz Ahmad	2012	Design and Optimization of Four-Dimensional Cone-Beam Computed Tomography in Image-Guided Radiation Therapy	Tinsu Pan, PhD
Peter Park	2012	Development of Beam-Specific Planning Target Volume and Robust Plan Analysis Tool for Proton Therapy	X. Ronald Zhu, PhD
Zhiqian Henry Yu	2013	Improving Cervical Cancer Nodal Boost Radiation Therapy by Quantifying Uncertainties and Exploring Advanced Radiation Therapy Modalities	Rajat Kudchadker, PhD
Kenneth Homann	2013	Radiogenic Second Cancer Risk Differences in Female Hodgkin Lymphoma Patients Treated with Proton versus Photon Radiotherapies	Rebecca Howell, PhD
Jason E. Matney	2013	Investigation of Respiratory Motion Management Techniques for Proton and Photon Radiotherapy of Lung Cancer	Radhe Mohan, PhD
John G. Eley	2013	Scanned Ion Beam Therapy for Thoracic Tumors	Wayne Newhauser, PhD
Jongmin Cho	2014	Use of PET for Proton Therapy Verification	Geoffrey S. Ibbott, PhD
Adam Yock	2014	Forecasting Longitudinal Changes in Oropharyngeal Tumor Volume, Position and Morphology during Image-Guided Radiation Therapy	Laurence E. Court, PhD
Ryan J. Bosca	2014	Methodological Development of a Multi-Parametric Quantitative Imaging Biomarker Framework for Assessing Treatment Response with MRI	R. Jason Stafford, PhD
Sarah Joy Castillo	2014	Evaluation of Artifacts in Experimental 4D CT Acquisition Methods	Thomas Guerrero, MD, PhD
Joey P. Cheung	2014	Image-Guided Proton Therapy for Online Dose-Evaluation and Adaptive Planning	Laurence E. Court, PhD
Daniel Robertson	2014	Volumetric Scintillation Dosimetry for Scanned Proton Beams	A. Sam Beddar, PhD
Austin Faught	2014	A New Independent Monte Carlo Dose Calculation Quality Assurance Audit Tool	David S. Followill, PhD
Joshua Yung	2014	Stochastic Data Assimilation Approaches for Magnetic Resonance Temperature Imaging	John D. Hazle, PhD
Landon Wooton	2014	*In vivo* Dosimetry using Plastic Scintillation Detectors for External Beam Radiation Therapy	A. Sam Beddar, PhD

Ph.D. Graduate	Year	Dissertation	Advisor
Jessica Nute	2015	Differentiation of Low Attenuation, Intracranial Calcification and Hemorrhage Using Dual-Energy Computed Tomography	Dianna Cody, PhD
Jessie Huang-Vredevoogd	2015	Reduction of Dose Calculation Errors for Patients with Metal Implants Receiving Photon Radiation Therapy	Stephen Kry, PhD
Jacqueline Tonigan Faught	2015	Quantification of IMRT Severity Scores for Improvement of FMEA Results	David S.Followill, PhD
Daniel Smith	2015	Prophylactic Cranial Irradiation Reduces the Incidence of Brain Metastasis in a Mouse Model of Metastatic Breast Cancer	Wendy Woodward, MD, PhD
Hua Asher Ai	2015	Improving Attenuation Correction in Hybrid Positron Emission Tomography	Richard E. Wendt III, PhD
Ryan Grant Lafratta	2015	Quality Assurance of Advanced Modalities Using PRESAGE Dosimeters	Geoffrey S. Ibbott, PhD
Samuel Fahrenholtz	2015	Prediction of Laser Ablation in Brain: Sensitivity, Calibration and Validation	R. Jason Stafford, PhD
Justin K. C. Mikell	2015	Voxel-Level Absorbed Dose Calculations with a Deterministic Grid-Based Boltzmann Solver for Nuclear Medicine and the Clinical Value of Voxel-Level Calculations	S. Cheenu Kappadath, PhD
David V. Fried	2015	Investigation of Quantitative Image Features from Pretreatment CT and FDG-PET Scans in Stage III NSLC Patients Undergoing Definitive Radiation Therapy	Laurence E. Court, PhD
James R. Kerns	2016	Identifying Treatment Planning System Errors in IROC-Houston Head and Neck Phantom Irradiations	Stephen Kry, PhD
Tze Yee Lim	2016	Encapsulated Contrast Agent Markers for MRI-Based Post-Implant Dosimetry	Rajat Kudchadker, PhD
Shane P. Krafft	2016	Utilizing Computed Tomography Image Features to Advance Prediction of Radiation Pneumonitis	Mary K. Martel, PhD
Christopher R. Peeler	2016	Assessing the Potential Clinical Impact of Variable Biological Effectiveness in Proton Radiotherapy	Radhe Mohan, PhD
Wendy "Siman" Siman	2016	Bias and Variability in Image-Based Volumetric Yttrium-90 Dosimetry	S. Cheenu Kappadath, PhD
Joshua S. Niedzielski	2016	Investigation of Radiation Injury in the Esophagus from Definitive Chemoradiation Therapy Using Novel Imaging Biomarkers	Laurence E. Court, PhD
Christopher M. Walker	2016	Novel Simulation to Avoid Bias in Measurement of Hyperpolarized Pyruvate: Demonstrated in Phantom and *in Vivo*.	James Bankson, PhD
Christopher J. MacLellan	2016	Determination of Thermal Dose Model Parameters Using Magnetic Resonance Imaging	R. Jason Stafford, PhD
Shuaiping Ge	2017	Improvements in Robustness and Optimality with 4-Dimensional Robust Optimization of Intensity-Modulated Proton Therapy Plans for Lung Cancer Patients	Radhe Mohan, PhD

Ph.D. Graduate	Year	Dissertation	Advisor
Ashley E. Rubinstein	2017	A Preclinical Study of Radiation-Induced Lung Toxicity When Irradiating in a Strong Magnetic Field	Laurence E. Court, PhD
W. Scott Ingram	2017	Image Registration to Map Endoscopic Video to Computed Tomography for Head and Neck Radiotherapy Patients	Laurence E. Court, PhD
Xenia Fave	2017	Detecting and Evaluating Therapy-Induced Changes in Radiomics Features Measured from Non-small Cell Lung Cancer to Predict Patient Outcomes	Laurence E. Court, PhD
Lawrence Bronk	2017	High Throughput Mapping of Particle Therapy Biological Effects	David R. Grosshans, MD
Rachael M. Martin	2017	Improvements in Four-Dimensional and Dual Energy Computed Tomography	Tinsu Pan, PhD
Hannah J. Lee	2017	Volumetric, Magnetic Resonance-Visible, and Radiation-Sensitive Detectors for Magnetic Resonance Image-Guided Radiation Therapy	Geoffrey S. Ibbott, PhD