

# **MEDICAL PHYSICS GRADUATE PROGRAM STUDENT HANDBOOK**

<http://www.mdanderson.org/gradschool>

August 2011

The information in this handbook is subject to change.  
Please visit the Medical Physics Graduate Program and GSBS websites  
for the most current information and forms.

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**MP Website:** [See](http://www.mdanderson.org/gradschool) link on [www.mdanderson.org/gradschool](http://www.mdanderson.org/gradschool)

The MP website is your resource for all matters pertaining to the Medical Physics Graduate Program. Bookmark it today!

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ACB Ambulatory Clinical Building/Mays Clinic  
 CPB Cancer Prevention Building  
 FCT Faculty Center Tower (Pickens)  
 GP1 Greenpark One Building  
 HMB The University of Texas Houston Main Building  
 MDA M.D. Anderson Cancer Center  
 MSB The University of Texas Medical School  
 ERD El Rio Building  
 PAT Pickens Academic Tower  
 3SCR South Campus Research Building 3  
 PTC Proton Therapy Center

GSBS Medical Physics Students (as of 8/5/11)  
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Kiley Pulliam	2009	Kry	713/745-8989	ERD1.319	<a href="mailto:kbpulliam@mdanderson.org">kbpulliam@mdanderson.org</a>
Daniel Robertson	2008	Beddar	713/563-8178	B2.4502	<a href="mailto:dgrobertson@mdanderson.org">dgrobertson@mdanderson.org</a>
Sarah Scarboro	2008	Kry	713/563-8079	ERD1.380	<a href="mailto:sbscarboro@mdanderson.org">sbscarboro@mdanderson.org</a>
Jackie Tonigan	2009	Followill	713/745-8989	ERD1.319	<a href="mailto:jrtanigan@mdanderson.org">jrtanigan@mdanderson.org</a>
Yoshi Tsunashima	2006	Dong	713/792-0294	B2.4634	<a href="mailto:ytsunash@mdanderson.org">ytsunash@mdanderson.org</a>
Yevgeney Vinogradskiy	2009	Martel	713/745-0440	B2.4518	<a href="mailto:yvinogra@mdanderson.org">yvinogra@mdanderson.org</a>
Henry Yu	2008	Dong	713/563-2571	B2.4634	<a href="mailto:zhyu@mdanderson.org">zhyu@mdanderson.org</a>

Rui Zhang	2007	Newhauser	713/792-4513	ACBP1.2972	<a href="mailto:Rui.Zhang@mdanderson.org">Rui.Zhang@mdanderson.org</a>
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## S.M.S. in Medical Physics Program

Student	Year Entered Program	Faculty Supervisor	Phone #	Room #	Email
Jennelle Bergene	2010	Followill	713/745-8989	ERD1.319	<a href="mailto:jbergene@mdanderson.org">jbergene@mdanderson.org</a>
Kevin Casey	2010	Followill	713/745-8989	ERD1.319	<a href="mailto:kecasey@mdanderson.org">kecasey@mdanderson.org</a>
Yi-Pei Chen	2010	Dong	713/563-5088	B2.4634	<a href="mailto:ychen12@mdanderson.org">ychen12@mdanderson.org</a>
Katherine Dextraze	2011	Jackson	713/792-3860	FCT14.5021.01	
Olivia Huang	2011	Jackson	713/792-3842	FCT14.5021.02	
Elizabeth Mckenzie	2011	Jackson	713/792-3814	FCT14.5021.06	
James Neihart	2011	Jackson	713/792-3838	FCT14.5021.07	
Jared Ohrt	2010	Balter	713/792-3848	B2.4634.04	<a href="mailto:johrt@mdanderson.org">johrt@mdanderson.org</a>
Roman Repchak	2010	Followill	713/745-8989	ERD1.319	<a href="mailto:rrepchak@mdanderson.org">rrepchak@mdanderson.org</a>
Kevin Vredevoogd	2010	Ibbott	713/745-8989	ERD1.319	<a href="mailto:kmvredevoogd@mdanderson.org">kmvredevoogd@mdanderson.org</a>
Matt Wait	2011	Jackson	713/792-3839	FCT14.5021.08	

ACB Ambulatory Clinical Building/Mays Clinic  
 CPB Cancer Prevention Building  
 FCT Faculty Center Tower (Pickens)  
 GP1 Greenpark One Building  
 MDA M.D. Anderson Cancer Center  
 MSB The University of Texas Medical School  
 ER El Rio Building  
 PAT Pickens Academic Tower  
 3SCR South Campus Research Building 3  
 PTC Proton Therapy Center

## GSBS Contacts

### George M. Stancel, Ph.D.

Dean  
Office: BSRB3.8436  
Tel: (713) 500-9880  
Email: George.M. [Stancel@uth.tmc.edu](mailto:Stancel@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Eric J. Solberg, M.A.

Associate Dean for Management  
Office: BSRB3.8424  
Tel: (713) 500-9876  
Email: [Eric.J.Solberg@uth.tmc.edu](mailto:Eric.J.Solberg@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Victoria Knutson, Ph.D.

Associate Dean for Academic Affairs  
Office: BSRB3.8467  
Tel: (713) 500-9870  
Email: [Victoria.P.Knutson@uth.tmc.edu](mailto:Victoria.P.Knutson@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Thomas J. Goka, Ph.D.

Assistant Dean for Outreach & Minority  
Office: BSRB3.8435  
Tel: (713) 500-9860  
Email: [Thomas.J.Goka@uth.tmc.edu](mailto:Thomas.J.Goka@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Michelle Steiger, Ph.D.

Assistant Dean for Admission  
Office: BRSB3.8437  
Tel: (713) 500-9860  
Email: [Michelle.A.Steiger@uth.tmc.edu](mailto:Michelle.A.Steiger@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Bunny Perez

Chief of Student Records  
Office: BSRB3.8447  
Tel: (713) 500-9871  
Email: [Lourdes.V.Perez@uth.tmc.edu](mailto:Lourdes.V.Perez@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Joy Lademora

Administrative Assistant, Academic Affairs  
Office: BSRB3.8455  
Tel: (713) 500-9872  
Email: [joy.lademora@uth.tmc.edu](mailto:joy.lademora@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Michael Vallodolid

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Office: BSRB3.8411  
Tel: (713) 500-9858  
Email: [Alfred.M.Valladolid@uth.tmc.edu](mailto:Alfred.M.Valladolid@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

### Lily D'Agostino

Receptionist, Asst. for Public Affairs & Development  
Office: BSRB3.8344  
Tel: (713) 500-9850  
Email: [Gloria.L.DAgostino@uth.tmc.edu](mailto:Gloria.L.DAgostino@uth.tmc.edu)  
Mail: 3.844 BSRB (GSBS); Unit 1011

GSBS Website: <http://www.uthouston.edu/gsbs>

GSBS Forms: <http://www.uthouston.edu/gsbs/current-students/academics/forms/index.htm>

GSBS Room Reservations: <http://www.uthouston.edu/gsbs/current-students/information-technology/classroom/index.htm>

# **S.M.S. in Medical Physics Program**

## **Program Objectives**

PROGRAM IS DESIGNED FOR STUDENTS WHO SEEK:

- M.S. Degree
- Clinical Careers in Medical Physics

PROGRAM WILL PREPARE STUDENT FOR A CLINICAL RESIDENCY PROGRAM AND/OR A CAREER IN:

- Clinical Medical Physics
- Clinical Support Industry
- Clinical Research Laboratory

OR FOR FUTURE STUDIES IN:

- Ph.D. Program in Medical Physics

## Degree Requirements for the SMS in Medical Physics Degree

### Coursework:

The student must complete a minimum of 34 semester hours of didactic coursework, including 32 hours of required courses and 2 hours of electives.

1. Required Courses (semester hours in parentheses)
  - (3) Mathematics for Medical Physics
  - (3) Introduction to Medical Physics I: Basic Interactions
  - (3) Introduction to Medical Physics II: Medical Imaging
  - (3) Introduction to Medical Physics III: Therapy
  - (3) Introduction to Medical Physics IV: Nuclear Medicine
  - (3) Electronics for Medical Physicists
  - (3) Radiation Detection, Instrumentation and Data Analysis
  - (2) Radiation Biology
  - (3) Introduction to Radiation Protection
  - (2) Anatomy and Oncology for Medical Physicists
  - (3) Medical Physics Seminar (3 semesters x 1 hour / semester)
  - (1) The Ethical Dimensions of the Biomedical Sciences
  
2. Available Electives (semester hours in parentheses)
  - (4) Biomedical Statistics
  - (3) Special Radiation Therapy Procedures
  - (2) Special Project Course: Radiation Transport Methods
  - (2) Special Project: Volumetric Image Reconstruction
  - (3) Digital Processing of Biomedical Images
  - (2) Principles of Magnetic Resonance Imaging (MRI)
  - (2) Physics of Positron Emission Tomography
  - (X) Other electives within GSBS, Rice University, or University of Houston

### Thesis:

A thesis of quality sufficient for publication in a refereed journal is required. The student must register for thesis credit for at least 1 semester. The student is admitted to candidacy upon the GSBS Academic Standards Committee approving that the planned program of coursework, abstract of the proposed research\*, and proposed members of the Supervisory Committee meet GSBS standards. The student must be admitted to candidacy before receiving credit for the first semester of Thesis.

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

Prior to completing all degree requirements, the student is expected to prepare a first draft of at least one paper based on the thesis work and submit it for publication in an appropriate peer-reviewed scientific journal.

### Thesis Requirement

The MP Program follows the GSBS guidelines for the M.S. thesis and thesis defense. See the following GSBS web pages for relevant information.

<http://gsbs.uth.tmc.edu/policies/msreqs.html>  
<http://gsbs.uth.tmc.edu/gradguide/thesis.html>

### Medical Physics Affiliation on Publications

All manuscripts authored by MP students and faculty should also include an affiliation with the GSBS. Suggested wording is as follows: “Department of XXX, The University of Texas M. D. Anderson Cancer Center and the Medical Physics Graduate Program at The University of Texas Graduate School of Biomedical Sciences at Houston.”

### Clinical Rotation:

The student must complete two clinical rotations, each requiring 200-300 hours:

- (4) Radiation Therapy Physics Rotation
- (4) Diagnostic Imaging Physics Rotation

### Waiving a Required Course

Students wishing to waive a medical physics required course may do so with the approval of both their advisor and the appropriate course coordinator, and only if the course coordinator believes a course taken previously is equivalent to the medical physics course. The proper paperwork, provided later in this handbook, must be completed and turned into the program office for final approval.

### Supplementary Training (not mandatory):

Students may receive supplementary training by taking short courses in Therapeutic Radiological Physics, offered by the Department of Radiation Physics, or Diagnostic Physics, offered by the Department of Imaging Physics. Formal credit is not awarded for these courses. Students should arrange for enrollment in consultation with the Department of Imaging Physics Executive Director for Educational Programs (Georgeanne Moore).

### Committee Meetings Requirement

All medical physics students are required to meet with their advisory or supervisory committees at least two times per year, usually in six-month intervals. However, the program encourages more frequent meetings. You will find a detailed description of the different committee meetings, how to set them up, how to prepare, what to bring, what to expect, etc. in the subsequent “Committee Meetings” section (p 47). Information on these topics will also be provided by the Program Director during the spring semester Medical Physics Seminar series.

\* The Graduate School of Biomedical Sciences only requires that the student submit a 1-page abstract. However, Medical Physics Program Advisory Committees may require the M.S. student to do a proposal in NIH format. The Advisory Committee will let the student know which is required. First-year students are given a lecture on preparing a research proposal in NIH format as part of the Spring Medical Physics Seminar course.

All medical physics students should form their Advisory Committees no later than summer semester of their first year.

The purpose of your 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 your first Advisory Committee meeting. You do not need extensive results to present at this first meeting. The goal of the first meeting is to get advice that will help you plan your future directions.

#### Participation in Program and Departmental Seminars and Events

All students are expected, and in some cases required, to participate in a variety of program and departmental-based activities that are held through the year.

#### *Departmental-Based Requirements*

- Research Imaging Seminars: Students in the Department of Imaging Physics are expected to attend this weekly seminar series.
- Radiation Physics Medical Physics Seminars: Radiation Physics students in Medical Physics are expected to attend this weekly seminar series.
- Medical Physics Summer Trainee Seminar Series: Students in both Imaging Physics and Radiation Physics are required to participate in this seminar series.

#### *Other Seminars and Events*

- Annual Student Research Retreat (held in the summer term)
- Thesis Defense Talks
- Journal Clubs
- Fall Faculty/Student Meeting and Mixers
- Other seminars within the Texas Medical Center as identified by Program Director or Department Chairs

## Typical Academic Plan (Begin Fall 2011)

### Year 1, Semester 1, Fall 2011

- (3) Mathematics for Medical Physics
- (3) Introduction to Medical Physics I: Basic Interactions
- (3) Electronics for Medical Physicists
- (2) Radiation Biology or
- (2) Anatomy & Oncology for Medical Physicists
- (1) Medical Physics Seminar
- (1) The Ethical Dimensions of the Biomedical Sciences

### Year 1, Semester 2, Spring 2012

- (3) Radiation Detection, Instrumentation and Data Analysis
- (3) Introduction to Medical Physics II: Medical Imaging
- (3) Introduction to Medical Physics III: Therapy
- (3) Introduction to Medical Physics IV: Nuclear Medicine
- (1) Medical Physics Seminar

\*\*\*Deadline for formation of Advisory Committee\*\*\*

### Year 1, Semester 3, Summer 2012

- (3-6) Research in Biomedical Sciences
- (0-3) Electives
- (3) Introduction to Radiation Protection

### Year 2, Semester 4, Fall 2012

- (2) Radiation Biology or
- (2) Anatomy and Oncology for Medical Physicists
- (1) Medical Physics Seminar
- (4) Clinical Rotation I (Fall or Spring)
- (2-6) Research in Biomedical Sciences

\*\*\*Goal for formation of Supervisory Committee, Petition to Candidacy for M.S.\*\*\*

### Year 2, Semester 5, Spring 2013

- (5-9) Research in Biomedical Sciences or Thesis for Master of Science
- (4) Clinical Rotation I or II (Spring or Summer)

### Year 2, Semester 6, Summer 2013

- (X) Elective
- (4) Clinical Rotation II (if not taken in Spring)
- (2-6) Thesis for Master of Science

**Note:** Radiation Physics Short Courses and/or Imaging Physics Short Courses are optional opportunities; they cannot be taken for credit. Be sure to let Georgeanne Moore know in advance if you wish to attend any available short courses.

## GRADUATES OF SPECIALIZED MASTERS IN MEDICAL PHYSICS (1976 – 2011)

1. NAME: Ronald W. Cowart  
YEAR GRADUATED: 1976  
THESIS: An Investigation of the Inverse Pinhole Camera  
ADVISOR: Alfonso Zermeno, Ph.D.
2. NAME: Mina Behmard  
YEAR GRADUATED: 1977  
THESIS: Displacement Correction Factors for High Energy X-rays  
ADVISOR: Peter R. Almond, Ph.D.
3. NAME: Richard H. Stark  
YEAR GRADUATED: 1977  
THESIS: Design and Use of Zero Replacement Tissue Equivalent and Air Equivalent Ionization Chambers  
ADVISOR: William F. Gagnon, Ph.D.
4. NAME: Charles A. Wissuchek  
YEAR GRADUATED: 1978  
THESIS: Spectrum Measurement in Diagnostic X-ray: A New Technique  
ADVISOR: Alfonso Zermeno, Ph.D.
5. NAME: Jeffrey A. Meyer  
YEAR GRADUATED: 1979  
THESIS: A Rational Modulation Transfer Function in Medical Imaging  
ADVISOR: Alfonso Zermeno, Ph.D.
6. NAME: Marcia D. Sage  
YEAR GRADUATED: 1979  
THESIS: The Effect of the Characteristic Curve Shape in the Determination of the Line Spread Function and the Modulation Transfer Function of Radiographic Screen-Film Systems  
ADVISOR: Arthur G. Haus, Ph.D.
7. NAME: Kanayo E. Ubesie  
YEAR GRADUATED: 1981  
THESIS: Ion Collection Efficiency Determinations for Cylindrical Ionization Chambers Irradiated with Scanned Electron Beams  
ADVISOR: William F. Hanson, Ph.D.

8. NAME: Stephen H. Mahood  
YEAR GRADUATED: 1982  
THESIS: Evaluation of High Energy X-ray Replacement Factors for Cylindrical Ionization Chambers  
ADVISOR: Peter R. Almond, Ph.D.
9. NAME: Chirapha Tannanonta  
YEAR GRADUATED: 1982  
THESIS: Investigation of Neutrons Inside and Outside of the X-ray Beam Produced by Linear Accelerators  
ADVISOR: Robert J. Shalek, Ph.D.
10. NAME: Connel Chu  
YEAR GRADUATED: 1983  
THESIS: Evaluation of the Thermoluminescent Characteristics of Neutron Insensitive Lithium Borate and Lithium Fluoride on Therapeutic Heavy Charged Particle Beams  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
11. NAME: Alex M. Hashemi  
YEAR GRADUATED: 1986  
THESIS: Determination of Exposure Rate Constant for a New Design I-125 Seed  
ADVISOR: Michael D. Mills, Ph.D.
12. NAME: Richard N. Umeh  
YEAR GRADUATED: 1986  
THESIS: Determination of X-ray Beam Quality Changes of Linear Accelerator from Ionization Measurements in Phantom  
ADVISOR: William F. Hanson, Ph.D.
13. NAME: Charles M. Able  
YEAR GRADUATED: 1987  
THESIS: Evaluation of the MDACC Total Scalp Electron Irradiation Technique  
ADVISOR: Michael D. Mills, Ph.D.
14. NAME: Min Jing  
YEAR GRADUATED: 1987  
THESIS: Calculation of Cobalt-60 Dose Distributions Using Fast Fourier Transformations  
ADVISOR: Arthur L. Boyer, Ph.D.
15. NAME: Pei-Fong Wong  
YEAR GRADUATED: 1987  
THESIS: Comparison of Electron Beam Depth-Dose and Off-Axis Profile Measured with Various Detectors in Water and Plastic  
ADVISOR: William F. Hanson, Ph.D.

16. NAME: R. Cole Robinson  
 YEAR GRADUATED: 1989  
 THESIS: Energy Response of LiF TLD-100 to High Energy Photon Beams  
 ADVISOR: Thomas H. Kirby, Ph.D.
17. NAME: Ramaswamy J. Sadagopan  
 YEAR GRADUATED: 1989  
 THESIS: Application of a Laplace Transform Pair Model to Deconvolve High Energy Photon Spectra From Transmission Measurements  
 ADVISOR: William F. Hanson, Ph.D.
18. NAME: Gregory S. Dominiak  
 YEAR GRADUATED: 1991  
 THESIS: Dose in Spinal Cord Following Electron Irradiation  
 ADVISOR: George Starkschall, Ph.D.
19. NAME: Scott M. Jones  
 YEAR GRADUATED: 1991  
 THESIS: The Application of FFT Based Correlation to Digital Portal Images  
 ADVISOR: Arthur L. Boyer, Ph.D.
20. NAME: Qamar U. Zaman  
 YEAR GRADUATED: 1991  
 THESIS: Determination of Perturbation Correction Factor for Cylindrical Chambers in an Electron Beam  
 ADVISOR: William F. Hanson, Ph.D.
21. NAME: James M. Bruno  
 YEAR GRADUATED: 1992  
 THESIS: Differentiation Between Calcium Hydroxyapatite and Calcium Oxalate Microcalcifications on a Mammogram Based on Their Imaging Properties: A Phantom Study  
 ADVISOR: Jose A. Bencomo, Ph.D.
22. NAME: Michael J. Gazda  
 YEAR GRADUATED: 1992  
 THESIS: Response of the Lacrimal Gland to Single Doses of Radiation, A Time and Dose Study  
 ADVISOR: Timothy E. Schultheiss, Ph.D.
23. NAME: Laurie F. Hefner  
 YEAR GRADUATED: 1992  
 THESIS: Single Field Depth Characteristics Measured Using Ferrous Sulphate Gels and MRI: A Comparison with Film and Ion Chamber Measurements  
 ADVISOR: John D. Hazle, Ph.D.

24. NAME: Sergio D. Ballester  
YEAR GRADUATED: 1993  
THESIS: Two Models for Estimating Maximum Spinal Cord Dose for Long Irradiation Treatments  
ADVISOR: William F. Hanson, Ph.D.
25. NAME: Maria N. Graves  
YEAR GRADUATED: 1993  
THESIS: Evaluation of ICRU Interstitial Implant Doses: Central and Peripheral Dose  
ADVISOR: William F. Hanson, Ph.D.
26. NAME: George E. Merk  
YEAR GRADUATED: 1993  
THESIS: The Application of ROC Analysis in Comparing Detection Ability of Portal Image Localization Errors  
ADVISOR: Arthur L. Boyer, Ph.D.
27. NAME: Edward R. Bawiec  
YEAR GRADUATED: 1994  
THESIS: Quality Assurance of Electron Bolus  
ADVISOR: George Starkschall, Ph.D.
28. NAME: Twyla R. Willoughby  
YEAR GRADUATED: 1994  
THESIS: Application of a Neural Network in Evaluating and Optimizing Three-Dimensional Treatment Plans  
ADVISOR: George Starkschall, Ph.D.
29. NAME: E. Joe Grant  
YEAR GRADUATED: 1994  
THESIS: A Triple Energy Window Method for In Vivo Quantization of Iodine-131 From Anger Camera Images  
ADVISOR: Daniel J. Macey, Ph.D.
30. NAME: Timothy J. Waldron  
YEAR GRADUATED: 1995  
THESIS: Calculation of Dynamically-Wedged Isodose Distribution From Segmented Treatment Tables and Open-Field Measurements  
ADVISOR: Arthur L. Boyer, Ph.D.
31. NAME: Robert Praeder  
YEAR GRADUATED: 1995  
THESIS: Prediction of Electron Beam Output Factors Using a Pencil Beam Model with Two Gaussian Components  
ADVISOR: Almon S. Shiu, Ph.D.

32. NAME: Peter A. Balter  
 YEAR GRADUATED: 1995  
 THESIS: The Development of a Mailable Phantom for Remote Monitoring of Stereotactic Radiosurgery  
 ADVISOR: William F. Hanson, Ph.D.
33. NAME: Sarah A. Danielson  
 YEAR GRADUATED: 1996  
 THESIS: MR Image Segmentation of Tumor and Necrosis in Soft-Tissue Sarcomas  
 ADVISOR: Edward F. Jackson, Ph.D.
34. NAME: Dena L. McCowan  
 YEAR GRADUATED: 1996  
 THESIS: Acquisition, Processing and Display of Helical X-ray Computed Tomography Angiogram  
 ADVISOR: John D. Hazle, Ph.D.
35. NAME: Kyle J. Antes  
 YEAR GRADUATED: 1996  
 THESIS: Comparison of Miniature Multileaf Collimation (MMLC) with Circular Collimation for Stereotactic Radiosurgery and Radiotherapy  
 ADVISOR: Almon S. Shiu, Ph.D.
36. NAME: Stephen K. Thompson  
 YEAR GRADUATED: 1996  
 THESIS: Performance Analysis of a Lossy Compression Algorithm for Radiology Based on Cubic Spine Wavelets  
 ADVISOR: John D. Hazle, Ph.D.
37. NAME: Donna M. Reeve  
 YEAR GRADUATED: 1997  
 THESIS: Pharmacokinetic Model Parameter Estimation for Brain Lesions Using Dynamic Keyhole Fast Spin-Echo MR Imaging  
 ADVISOR: Edward F. Jackson, Ph.D.
38. NAME: Victor L. Howard  
 YEAR GRADUATED: 1997  
 THESIS: Study of Distortions in Radiotherapy Simulator Fluoroscopic Images  
 ADVISOR: Isaac I. Rosen, Ph.D.
39. NAME: Matthew K. Vossler  
 YEAR GRADUATED: 1998  
 THESIS: A Comparison of the Photon Energy Spectra of Several Radiotherapy Linear Accelerators  
 ADVISOR: William F. Hanson

40. NAME: Jonathan M. Dugan  
 YEAR GRADUATED: 1998  
 THESIS: Computer Modeling of a Photostimulable Phosphor Digital Imaging Device  
 ADVISOR: Douglas Tucker, Ph.D.
41. NAME: Teresa A. Fischer  
 YEAR GRADUATED: 1998  
 THESIS: Retrospective Analysis of Lung Fibrosis Following Radiation and Chemotherapy for Lung Cancer  
 ADVISOR: Isaac I. Rosen, Ph.D.
42. NAME: Russell B. Tarver  
 YEAR GRADUATED: 1998  
 THESIS: Wavelet Compression of Simulated Computed Tomography Images  
 ADVISOR: John D. Hazle, Ph.D.
43. NAME: Michael R. Bieda  
 YEAR GRADUATED: 1999  
 THESIS: A Monte Carlo Method for Commissioning Electron Beams  
 ADVISOR: John A. Antolak, Ph.D.
44. NAME: Chris Baird  
 YEAR GRADUATED: 2000  
 THESIS: Dosimetry of Large-Breasted Patients Utilizing Compensators  
 ADVISOR: George Starkschall, Ph.D.
45. NAME: Luke McLemore  
 YEAR GRADUATED: 2000  
 THESIS: Dosimetric Characterization of A Palladium-103 Implanted Stent for Intravascular Brachytherapy  
 ADVISOR: John L. Horton, Ph.D.
46. NAME: Michael Lemacks  
 YEAR GRADUATED: 2000  
 THESIS: Two Methods for Improving the Detectability of Microcalcifications in Digital Mammography  
 ADVISOR: Chris C. Shaw, Ph.D.
47. NAME: Dee-Ann Radford  
 YEAR GRADUATED: 2001  
 THESIS: A Standardized Method of Quality Assurance for Intensity Modulated Radiation Therapy of the Prostate  
 ADVISOR: David S. Followill, Ph.D.

48. NAME: Amanda Krintz  
 YEAR GRADUATED: 2002  
 THESIS: A Reanalysis of the Collaborative Ocular Melanoma Study  
 Medium Tumor Trial Eye Plaque Dosimetry  
 ADVISOR: David S. Followill, Ph.D.
49. NAME: Christopher Cherry  
 YEAR GRADUATED: 2002  
 THESIS: A Heterogeneous Thorax Phantom for Remote Verification  
 of Three-Dimensional Conformal Radiotherapy  
 ADVISOR: William F. Hanson, Ph.D.
50. NAME: Laura Butler  
 YEAR GRADUATED: 2002  
 THESIS: Dosimetric Benefits of Respiratory Gating  
 ADVISOR: George Starkschall, Ph.D.
51. NAME: Nicholas C. Koch  
 YEAR GRADUATED: 2002  
 THESIS: Assessment of Respiratory Motion for Radiation Therapy  
 of Lung Cancer Using Magnetic Resonance Imaging  
 ADVISOR: H. Helen Liu, Ph.D.
52. NAME: Jennifer C. O'Daniel  
 YEAR GRADUATED: 2002  
 THESIS: The Delivery of IMRT with a Single Physical Modulator for  
 Multiple Fields: A Feasibility Study for Prostate and  
 Paranasal Sinus Cancers  
 ADVISOR: Lei Dong, Ph.D.
53. NAME: Michael Beach  
 YEAR GRADUATED: 2003  
 THESIS: Implementation of a Polymer Gel Dosimetry Insert for an  
 Anthropomorphic Phantom Used to Evaluate Head and  
 Neck Intensity-Modulated Radiation Therapy  
 ADVISOR: Geoffrey S. Ibbott, Ph.D.
54. NAME: Pai-Chun Melinda Chi  
 YEAR GRADUATED: 2005  
 THESIS: A Three-Dimensional Pencil-Beam Redefinition Algorithm  
 for Electron Arc Therapy  
 ADVISOR: Kenneth R. Hogstrom, Ph.D.
55. NAME: Gary Fisher  
 YEAR GRADUATED: 2005  
 THESIS: The Accuracy of 3-D Inhomogeneity Photon Algorithms in  
 Commercial Treatment Planning Systems Using a  
 Heterogeneous Lung Phantom  
 ADVISOR: David S. Followill, Ph.D.

56. NAME: Jackeline Santiago Estaban  
 YEAR GRADUATED: 2005  
 THESIS: Energy Dependence of a New TLD-100 System for Characterizing Low Energy Brachytherapy Sources  
 ADVISOR: Geoffrey S. Ibbott, Ph.D.
57. NAME: Claire Therese Nerbun  
 YEAR GRADUATED: 2005  
 THESIS: Analysis of MD-55-2 Gafchromic® Film as a Dosimetry Audit System for Proton Therapy  
 ADVISOR: David S. Followill, Ph.D.
58. NAME: Hilary Loupee Vass  
 YEAR GRADUATED: 2005  
 THESIS: Comparison of the Microskeleton PDR  $^{192}\text{Ir}$  Source to Traditional LDR.  $^{137}\text{Cs}$  for Treating Gynecological Cancers In a 10 Patient Monte Carlo Study.  
 ADVISOR: Geoffrey S. Ibbott, Ph.D.
59. NAME: Kenneth L. Homann  
 YEAR GRADUATED: 2005  
 THESIS: Evaluation of the Dose Within the Abutment Region Between Tangential and Supraclavical Fields for Various Breast Irradiation Techniques.  
 ADVISOR: Karl Prado, Ph.D.
60. NAME: Scott Davidson  
 YEAR GRADUATED: 2006  
 THESIS: Heterogeneity Dose Calculations Algorithm Accuracy in IRMT Using Anthropomorphic Thorax Phantom  
 ADVISOR: David S. Followill, Ph.D.
61. NAME: Earl Gates  
 YEAR GRADUATED: 2006  
 THESIS: The Dosimetric Impact of IMRT on Out-of-Field Structures in the Treatment of the Intact Breast: A Companion to Forward- Planned Techniques.  
 ADVISOR: Mohammad Salehpour, Ph.D.
62. NAME: Ryan Hecox  
 YEAR GRADUATED: 2006  
 THESIS: Dose Calculation Accuracy in the Presence of High-Z Material using Megavoltage CT for Treatment Planning  
 ADVISOR: Geoffrey S. Ibbott, Ph.D.

63. NAME: Michael Bligh  
YEAR GRADUATED: 2006  
THESIS: Implementation of Quantitative Computed Tomography on Multi-Slice Computed Tomography Scanners  
ADVISOR: Dianna Cody, Ph.D.
64. NAME: Blake Cannon  
YEAR GRADUATED: 2006  
THESIS: Quantitative Diffusion and Fat Imaging of Vertebral Compression Fractures  
ADVISOR: Jingfei Ma, Ph.D.
65. NAME: Alanna McDermott  
YEAR GRADUATED: 2007  
THESIS: Validating Pediatric CT Surface and Organ Doses Predicted by Monte Carlo Simulations Using Point Dosimetric Measurements  
ADVISOR: Dianna Cody, Ph.D.
66. NAME: Paige Nitsch  
YEAR GRADUATED: 2007  
THESIS: Assessment of CyberKnife's Heterogeneity Dose Calculation Algorithm and Respiratory Tracking System Using an Anthropomorphic Thorax Phantom  
ADVISOR: Geoffrey S. Ibbott, Ph.D.
67. NAME: Susannah Lazar  
YEAR GRADUATED: 2007  
THESIS: Risk of Secondary Fatal Malignancies from Hi-Art Tomotherapy IMRT  
ADVISOR: David S. Followill, Ph.D.
68. NAME: Renee Dickinson  
YEAR GRADUATED: 2007  
THESIS: Technical Improvement of Lymphoscintigraphy  
ADVISOR: Richard Wendt, III, Ph.D.
69. NAME: Jimmy Jones  
YEAR GRADUATED: 2008  
THESIS: Study of the Radiation Damage to Plastic Scintillating Fibers and Optical Fibers  
ADVISOR: A. Sam Beddar, Ph.D.
70. NAME: Maria Bellon  
YEAR GRADUATED: 2008  
THESIS: 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  
ADVISOR: David S. Followill, Ph.D.

71. NAME: Nathan Pung  
 YEAR GRADUATED: 2008  
 THESIS: Validation of a Conversion Method of Low Dose Rate to Pulsed Dose Rate Intracavitary Brachytherapy Prescription for the Treatment of Cervical Carcinoma  
 ADVISOR: Firas Mourtada, Ph.D.
72. NAME: Yevgeney Vinogradskiy  
 YEAR GRADUATED: 2008  
 THESIS: Verification of 4D Dose Calculations  
 ADVISOR: George Starkschall, Ph.D.
73. NAME: John Zullo  
 YEAR GRADUATED: 2008  
 THESIS: Validation of Intensity Modulated Radiation Therapy Point Dose Calculation Accuracy Performed using a scatter Integration Based Algorithm  
 ADVISOR: Karl Prado, Ph.D.
74. NAME: Triston Dougall  
 YEAR GRADUATED: 2009  
 THESIS: Optimization of Exposure Factors for Digital Radiography by means of CdTel X-ray Spectroscopy  
 ADVISOR: Charles Willis, Ph.D.
75. NAME: Georgi Georgiev  
 YEAR GRADUATED: 2009  
 THESIS: Comparison of Secondary Does in Pediatric Patients from Craniospinal Irradiations using Photon, Proton and Electro Spinal  
 ADVISOR: David Followill, Ph.D.
76. NAME: Ryan Grant  
 YEAR GRADUATED: 2009  
 THESIS: Implementation of an Anthropomorphic Pelvis Phantom for the Evaluation of Proton Therapy Treatment Procedures  
 ADVISOR: Geoffrey Ibbott, Ph.D.
77. NAME: Katie Hulme  
 YEAR GRADUATED: 2009  
 THESIS: Considerations for Computed-Tomography Dose Reduction in  $^{99m}\text{Tc}$  Spect/CT Protocols  
 ADVISOR: S. Cheenu Kappadath, Ph.D.
78. NAME: Joseph Dick  
 YEAR GRADUATED: 2010  
 THESIS: An Implant Mosfet Dosimeter Modified to Act as a Fiducial Marker  
 ADVISOR: Mohammad Salehpour, Ph.D.

79. NAME: James Kerns  
YEAR GRADUATED: 2010  
THESIS: Characterization of Optically-Stimulated Luminescent Detectors in Photon & Proton Beams for use in Anthropomorphic Phantoms  
ADVISOR: Geoffrey Ibbott, Ph.D.
80. NAME: Kelly Kisling  
YEAR GRADUATED: 2010  
THESIS: Volumetric Modulated Arc Therapy Evaluation with the Radiological Physics Center Head and Neck Phantom  
ADVISOR: Rebecca Howell, Ph.D.
81. NAME: Adam Springer  
YEAR GRADUATED: 2010  
THESIS: Evaluation of the Quantitative Accuracy of a Commercially-Available Positron Emission Mammography Scanner  
ADVISOR: Osama Mawlawi, Ph.D.
82. NAME: Derek Yaldo  
YEAR GRADUATED: 2010  
THESIS: Evaluation of the Sensitivity of the Anisotropic Analytical Algorithm (AAA) to the Commissioning Dataset  
ADVISOR: Rebecca Howell, Ph.D.
83. NAME: David Zamora  
YEAR GRADUATED: 2010  
THESIS: Thoracic Target Volume Delineation using Various Maximum-Intensity Projection Computed Tomography Image Sets for Stereotactic Body Radiation Therapy  
ADVISOR: Tinsu Pan, Ph.D.
84. NAME: Brad Lofton  
YEAR GRADUATED: 2010  
THESIS: New Tools for Monitoring Gamma Camera Uniformity  
ADVISOR: Richard Wendt, Ph.D.
85. NAME: Anthony Blatnica  
YEAR GRADUATED: 2011  
THESIS: Modification and Implementation of the RPC Heterogenous Thorax Phantom for Verification of Proton Therapy Treatment Procedures  
ADVISOR: Geoffrey Ibbott, Ph.D.

86. NAME: Sarah Joy  
YEAR GRADUATED: 2011  
THESIS: Assessment of Collimator Jaw Optimization in Reducing Normal Tissue Irradiation with Intensity Modulated Radiation Therapy  
ADVISOR: Peter Balter, Ph.D.
87. NAME: Kiley Pulliam  
YEAR GRADUATED: 2011  
THESIS: The Clinical Impact of Couch Top and Rails on IMRT and Arc Therapy  
ADVISOR: Stephen Fry, Ph.D.
88. NAME: Emily Neubauer  
YEAR GRADUATED: 2011  
THESIS: The Effect of Shoulder Variation on IMRT and Smart Arc for Head and Neck Cancer  
ADVISOR: Stephen Fry, Ph.D.
89. NAME: Jonathan Mueller  
YEAR GRADUATED: 2011  
THESIS: In-Vivo CT Dosimetry during Virtual Colonoscopy  
ADVISOR: Diana Cody, Ph.D.
90. NAME: Paige Summers  
YEAR GRADUATED: 2011  
THESIS: Development and Implementation of an Anthropomorphic Head Phantom for the Assessment of Proton Therapy Treatment Procedures  
ADVISOR: Geoffrey Ibbott, Ph.D.
91. NAME: Jacqueline Tonigan  
YEAR GRADUATED: 2011  
THESIS: Evaluation of Intensity Modulated Radiation Therapy (IMRT) Delivery Error Due to IMRT Treatment Plan Complexity and Improperly Matched Dosimetry Data  
ADVISOR: Stephen Fry, Ph.D.

# Ph.D. Program in Medical Physics Program

## Program Objectives

PROGRAM IS DESIGNED FOR STUDENTS WHO SEEK:

- Ph.D. Degree
- Research Careers in Medical Physics
- Clinical Careers in Medical Physics

PROGRAM WILL PREPARE STUDENT FOR A CLINICAL RESIDENCY PROGRAM AND/OR A CAREER IN:

- Academic Medical Physics
- Clinical Medical Physics
- Industrial Research Laboratory

## Degree Requirements for the PhD in Medical Physics Degree

Requirements for completion of the (M.S.)Ph.D. degree in Medical Physics are course work, research tutorials, research thesis and dissertation, and clinical rotations elaborated below. The spirit of the Program's degree requirements is to meet the existing requirements of the GSBS for the (M.S.)Ph.D. degree, with the following additions and options: (1) requiring a full slate of didactic courses in Medical Physics necessary to maintain CAMPEP accreditation, (2) requiring two clinical rotations, and (3) requiring core Biomedical Science courses that are more aligned with the field of Medical Physics.

1. Biomedical Sciences Core Curriculum (12 semester hours) - The required core curriculum listed below parallels GSBS requirements for core courses in the area of quantitative, molecular, cellular, and systems. These courses provide background for Medical Physics training, although they would not be adequate for other areas.
  - (3) Mathematics for Medical Physics (Quantitative)
  - (4) Fundamental Biological Principles of Molecular Imaging and Therapeutics (Molecular)
  - (2) Radiation Biology (Cellular)
  - (2) Anatomy and Oncology for Medical Physicists (Systems)
  - (1) The Ethical Dimensions of the Biomedical Sciences (Ethics)
  
1. Medical Physics Core Curriculum (24 semester hours) - Students who have completed equivalent graduate level courses in these areas may petition to the Program Steering Committee for advanced placement credit.
  - (3) Introduction to Medical Physics I: Basic Interactions
  - (3) Introduction to Medical Physics II: Medical Imaging
  - (3) Introduction to Medical Physics III: Therapy
  - (3) Introduction to Medical Physics IV: Nuclear Medicine
  - (3) Electronics for Medical Physicists
  - (3) Radiation Detection, Instrumentation, and Data Analysis
  - (3) Introduction to Radiation Protection
  - (3) Medical Physics Seminar (3 semesters x 1 hour/semester)
  
2. Specialty Curriculum - The student shall complete specialty courses as prescribed by the student's Ph.D. Advisory or Supervisory Committee. This should not exceed 12 semester hours for any one student. Below are selected, available advanced courses.
  - (4) Biomedical Statistics
  - (3) Digital Processing of Biomedical Images
  - (2) Physics of Positron Emission Tomography
  - (2) Principles of Magnetic Resonance Imaging
  - (3) Special Radiation Therapy Procedures
  - (2) Special Topics Course: Radiation Transport Methods
  - (X) Physics or Engineering Courses at Rice University or the University of Houston
  - (2) Special Topics Course: Volumetric Image Reconstruction

Research Tutorials (12 semester hours) - The student establishes an area of research for the M.S. thesis or Ph.D. dissertation by completing three research tutorials of 200 hours each. One of the three tutorials may be outside the area of Medical Physics. If the student has completed an M.S. degree with thesis, then only two research tutorials are required.

(12) Tutorial Research Experience (3 x 4 hours/semesters)

Thesis - An M.S. thesis, of quality sufficient for publication in a refereed journal, may be required. If so, the student must register for thesis credit for at least one semester. The student officially begins thesis research upon advancement to M.S. candidacy. This requires approval, by the Program and the GSBS Academic Standards Committee; of the student's program of course work, abstract of proposed research, and proposed members of the Supervisory Committee.

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

If a student already has a thesis-option M.S. degree, then he/she may petition to bypass the M.S. degree enroute to the Ph.D. The ultimate decision regarding the M.S. bypass is made by the student's Oral PhD Candidacy Exam Committee.

Students without a thesis-option M.S. degree can petition to bypass the M.S. degree. Such students must successfully pass a written candidacy exam prior to the formation of the Oral Candidacy Exam Committee. Typically, this written exam is taken at the start of the summer semester of a student's second year. However, the written exam can be taken as early as the third semester following matriculation. In addition to passing the written candidacy exam, the student must submit one manuscript as first author to a peer-reviewed journal and pass the oral candidacy examination. (This manuscript submission requirement is above and beyond the GSBS required submission of a manuscript prior to defense of dissertation, discussed below.) The ultimate decision regarding the M.S. bypass is made by the student's Oral PhD Candidacy Exam Committee.

\*\*\*\*\* Requirements for the M.S. degree are fulfilled at this point \*\*\*\*\*

#### Publication Requirements

All medical physics students are required to have at least one peer-reviewed, first authored paper either published or in submission prior to obtaining permission to defend their dissertation.

This requirement is intended to encourage Ph.D. students (and their advisors) to have their dissertation work ready for publication prior to their defense. This avoids the problematic situation in which a student completes the PhD. but has not written up the work for publication before leaving. Often this leads to long and needless delays in publication that can harm the student's future career prospects. This requirement encourages students and advisors to consider plans for publications at an early stage in dissertation projects.

Your supervisory committee will ultimately judge if your research accomplishments are sufficient for a 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 Supervisory Committees at each meeting.

The final evaluation of a student's readiness to defend the Ph.D. thesis is at the discretion of the Supervisory Committee.

#### Medical Physics Affiliation on Publications

All manuscripts authored by medical physics students and faculty should also include an affiliation with the GSBS. Suggested wording is as follows: "Department of XXX, The University of Texas M. D. Anderson Cancer Center and the Medical Physics Graduate Program at The University of Texas Graduate School of Biomedical Sciences at Houston."

Clinical Rotations (8 hours) - The student gains an introduction into clinical medical physics by completing two

clinical rotations, one in therapy and one in imaging, each comprising 200 hours.

- (4) Radiation Therapy Physics Rotation
- (4) Diagnostic Imaging Physics Rotation

#### Waiving a Required Course

Students wishing to waive a medical physics required course may do so with the approval of both their advisor and the course coordinator, and only if the course coordinator believes a course taken previously is equivalent to the medical physics course. If students wish to waive the GSBS area requirement that this course would have satisfied, they must also get approval from Dr. Knutson at GSBS to waive the GSBS requirement. The proper paperwork will be needed to be completed and turned into the program office for final approval. (See Georgeanne Moore for the appropriate forms for this purpose.)

#### PhD Written Candidacy Exam

Refer to Committee Meetings section starting on page 55.

Dissertation - A dissertation of quality sufficient for publication in a refereed journal is required. The student must register for dissertation credit for at least one semester. The student officially begins dissertation research upon advancement to Ph.D. candidacy. This requires passing the Oral Candidacy Exam and receiving approval by the Program and the GSBS Academic Standards Committee of the student's program of course work, abstract of proposed research, and proposed members of the Supervisory Committee.

After successfully completing the research and writing, the student must hold a formal defense of the dissertation, which includes the presentation of research findings in a public seminar.

The student is expected to submit at least one paper based on the dissertation work for publication in an appropriate peer-reviewed scientific journal.

GS000920                      Dissertation for Doctor of Philosophy

#### Dissertation Requirement

The medical physics Program follows the GSBS guidelines for the Ph.D. Dissertation and Thesis Defense. See the following GSBS web pages for further relevant information.

<http://gsbs.uth.tmc.edu/policies/phdreqs.html>

<http://gsbs.uth.tmc.edu/gradguide/thesis.html>

Supplementary Training (non-mandatory) - Students may receive supplementary training by taking short courses in Therapeutic Radiological Physics, offered by the Department of Radiation Physics, or Diagnostic Imaging, offered by the Department of Imaging Physics. Formal credit is not awarded for these courses. Students should arrange for enrollment in consultation with the Department of Imaging Physics Executive Director for Educational Programs (Georgeanne Moore).

### Committee Meetings Requirement

All medical physics students are required to meet with their advisory or supervisory committees at least two times per year, usually in six-month intervals. However, the program encourages more frequent meetings. You will find a detailed description of the different committee meetings, how to set them up, how to prepare, what to bring, what to expect, etc. in the subsequent "Committee Meetings" (p. 47). Information on these topics will also be provided by the Program Director during the spring semester Medical Physics Seminar series.

All medical physics students should form their Advisory Committees no later than summer semester of their first year.

The purpose of your 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 your first Advisory Committee meeting. You do not need extensive results to present at this first meeting. The goal of the first meeting is to get advice that will help you plan your future directions.

### Participation in Program and Departmental Seminars and Events

All students are expected, and in some cases required, to participate in a variety of program and departmental-based activities that are held through the year. If you have any questions

#### *Departmental-Based Requirements*

- Research Imaging Seminars: Students in the Department of Imaging Physics are expected to attend this weekly seminar series.
- Radiation Physics Medical Physics Seminars: Students in Radiation Physics Medical Physics are expected to attend this weekly seminar series.
- Medical Physics Summer Trainee Seminar Series: Students in both Imaging Physics and Radiation Physics are required to participate.

#### *Other Seminars and Events*

- *Annual Student Research Retreat*
- *Thesis Defense Talks*
- *Journal Clubs*
- *Fall Faculty/Student Meeting and Mixers*
- *Other seminars within the Texas Medical Center as identified by Program Director or Department Chairs*

## **TYPICAL ACADEMIC PLAN (M.S. Bypass Option)** **(M.S.) Ph.D. Program in Medical Physics (Begin Fall 2011)**

### Year 1, Semester 1, Fall 2011

- (3) Electronics for Medical Physicists
- (3) Introduction to Medical Physics I: Basic Interactions
- (2) Radiation Biology or
- (2) Anatomy & Oncology for Medical Physicists
- (1) Medical Physics Seminar
- (1) The Ethical Dimensions of the Biomedical Sciences
- (4) Tutorial Research Experience #1

### Year 1, Semester 2, Spring 2012

- (3) Radiation Detection, Instrumentation, and Data Analysis
- (3) Introduction to Medical Physics III: Therapy
- (3) Introduction to Medical Physics II: Medical Imaging, or
- (3) Introduction to Medical Physics IV: Nuclear Medicine
- (1) Medical Physics Seminar
- (4) Tutorial Research Experience #2

\*\*\* Goal for formation of Advisory Committee\*\*\*

### Year 1, Semester 3, Summer 2012

- (3) Introduction to Radiation Protection
- (2) Elective, Special Project, or Research
- (4) Tutorial Research Experience #3

\*\*\* Deadline for formation of Advisory Committee\*\*\*

### Year 2, Semester 4, Fall 2012

- (3) Mathematics for Medical Physicists
- (2) Radiation Biology or
- (2) Anatomy and Oncology for Medical Physicists
- (1) Medical Physics Seminar
- (1-3) Research in Biomedical Sciences

### Year 2, Semester 5, Spring 2013

- (4) Fundamental Biological Principles of Molecular Imaging & Therapeutics
- (3) Introduction to Medical Physics II: Medical Imaging, or
- (3) Introduction to Medical Physics IV: Nuclear Medicine
- (6) Research in Biomedical Sciences

### Year 2, Semester 6, Summer 2013

- (X) Elective
- (1-6) Research in Biomedical Sciences

\*\*\*Deadline for scheduling of Oral PhD Candidacy Exam\*\*\*

### Year 3, Semester 7, Fall 2013

- (9) Research in Biomedical Sciences

\*\*\* Deadline for advancement to PhD candidacy \*\*\*

Year 3, Semester 8, Spring 2014

(9) Research in Biomedical Sciences (Dissertation)

Year 3, Semester 9, Summer 2014

(X) Elective

(1-6) Research in Biomedical Sciences (Dissertation)

Year 4, Semester 10, Fall 2014

(9) Research in Biomedical Sciences (Dissertation)

Year 4, Semester 11, Spring 2015

(5) Research in Biomedical Sciences (Dissertation)

(4) Clinical Rotation I (Spring or Summer)

Year 4, Semester 12, Summer 2015

(2-6) Research in Biomedical Research (Dissertation)

(4) Clinical Rotation II (Summer or Fall)

Year 5, Semester 13, Fall 2015

(9) Research in Biomedical Research (Dissertation)

Year 5, Semester 14, Spring 2016

(9) Research in Biomedical Research (Dissertation)

Year 5, Semester 15, Summer 2016

(1-6) Research in Biomedical Research (Dissertation)

\*\*\* Goal for Ph.D. Defense, Public Seminar, Graduation \*\*\*

**Note:** Radiation Physics Short Courses and/or Imaging Physics Short Courses are optional opportunities; they cannot be taken for credit. Be sure to let Georgeanne Moore know, in advance, if you wish to attend any available short courses.

## Graduates of M.S. (Ph.D.) in Biomedical Sciences (Medical Physics)

(1977 – 2010)

### M.S.

1. NAME: Amparo Mendez  
YEAR GRADUATED: 1977  
THESIS:  $C_A$  and  $C_E$  Dependence on the Chamber Wall Material as a Function of Beam Energy  
ADVISOR: Peter R. Almond, Ph.D.
2. NAME: José Antonio Bencomo  
YEAR GRADUATED: 1978  
THESIS: The Effect of Reciprocity Low Failure When Determining the Characteristics Curve for Screen Film Systems  
ADVISOR: Alfonso Zermeno, Ph.D.
3. NAME: Steven M. Kirsner  
YEAR GRADUATED: 1986  
THESIS: Advanced Radiation Therapy Techniques for Retinoblastoma  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
4. NAME: Allen D. Green  
YEAR GRADUATED: 1991  
THESIS: Modeling of Dual Foil Scattering Systems for Clinical Electron Beams  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
5. NAME: Usman Qazi  
YEAR GRADUATED: 1995  
THESIS: Evaluation of a Quadruple Energy Window Scatter Subtraction Algorithm for Anger Camera Imaging  
ADVISOR: Daniel J. Macey, Ph.D.
6. NAME: Robin L. Kendall  
YEAR GRADUATED: 1996  
THESIS: Dose-Escalation Potential of Intensity-Modulated Conformal Therapy for Lung Cancer  
ADVISOR: Isaac I. Rosen, Ph.D.
7. NAME: Robert A. Boyd  
YEAR GRADUATED: 1998  
THESIS: The Effect of Using an Initial Polyenergetic Spectrum with the Electron Pencil-Beam Redefinition Algorithm  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
8. NAME: Nicholaus G. Zacharopoulos  
YEAR GRADUATED: 1998  
THESIS: MR Diffusion Tensor Imaging of Normal Human Brain with Selective Tissue Suppression  
ADVISOR: Ponnada Narayana, Ph.D.

9. NAME: Shannon M. Bragg-Sitton  
 YEAR GRADUATED: 1999  
 THESIS: Assessment of the Reliability and Reproducibility of Functional Magnetic Resonance Imaging for Selected Cognitive Tasks  
 ADVISOR: Edward F. Jackson, Ph.D.
10. NAME: Kent Gifford  
 YEAR GRADUATED: 2000  
 THESIS: Verification of a Commercial Radiation Treatment Planning System  
 ADVISOR: George Starkschall, Ph.D.
11. NAME: Brent C. Parker  
 YEAR GRADUATED: 2001  
 THESIS: Quantification of Uncertainties for PTV Margin Determination in Conformal Stereotactic Radiotherapy of Intracranial Lesions  
 ADVISOR: Almon S. Shiu, Ph.D.
12. NAME: Theodore R. Steger, III  
 YEAR GRADUATED: 2001  
 THESIS: Implementation and Verification of Techniques for Real-Time Analysis and Clinical Distribution of Functional Magnetic Resonance Imaging Data  
 ADVISOR: Edward F. Jackson, Ph.D.
13. NAME: Aziz H. Poonawalla  
 YEAR GRADUATED: 2002  
 THESIS: Technical Development and Optimization of Clinical Magnetic Resonance Tractography  
 ADVISOR: X. Joe Zhou, Ph.D.
14. NAME: Rebecca Milman  
 YEAR GRADUATED: 2003  
 THESIS: Measuring Cell Volume Fraction with High-Resolution Diffusion Weighted Magnetic Resonance Imaging  
 ADVISOR: X. Joe Zhou, Ph.D.
15. NAME: Stephen Kry  
 YEAR GRADUATED: 2003  
 THESIS: Secondary Dose Equivalent from IMRT Treatments  
 ADVISOR: Mohammad Salehpour, Ph.D.
16. NAME: Michael J. Price  
 YEAR GRADUATED: 2004  
 THESIS: Modification of the Pencil-Beam Redefinition Algorithm to Predict Central-Axis Percent Depth Dose for Rectangular Fields  
 ADVISOR: Kenneth R. Hogstrom, Ph.D.
17. NAME: Robert A. Rodgers  
 YEAR GRADUATED: 2005  
 THESIS: Electron Conformal Radiotherapy for Post-Mastectomy Irradiation: A Bolus-Free Multi-Energy, Multi-Segmented Field Algorithm.  
 ADVISOR: John A. Antolak, Ph.D.

18. NAME: Malcolm E. Heard  
YEAR GRADUATED: 2005  
THESIS: Characterizing Dose Distributions of Brachytherapy Sources Using Normoxic Gel  
ADVISOR: Geoffrey S. Ibbott, Ph.D.
19. NAME: Jason Shoales  
YEAR GRADUATED: 2005  
THESIS: Development of An Independent Audit Device for Remote Verification of 4D Radiotherapy  
ADVISOR: David S. Followill, Ph.D.
20. NAME: Jonas David Fontenot  
YEAR GRADUATED: 2006  
THESIS: Dose Per Monitor Unit Determination for Proton Therapy Treatment Portals with and without the Range Compensator.  
ADVISOR: Wayne D. Newhauser, Ph.D.
21. NAME: Adam Melancon  
YEAR GRADUATED: 2006  
THESIS: The Dosimetric Impact of Intrafractional Motion on IMRT Treatment of Prostate Cancer  
ADVISOR: Lei Dong, Ph.D.
22. NAME: Dustin Ragan  
YEAR GRADUATED: 2006  
THESIS: Partial Fourier Image Reconstruction for Efficient Water and Fat Separation in MR  
ADVISOR: Jingfei Ma, Ph.D.
23. NAME: Whitney Bivens Warren  
YEAR GRADUATED: 2007  
THESIS: Evaluation of Bang® Polymer Gel Dosimeters in Proton Beams  
ADVISOR: Geoffrey S. Ibbott, Ph.D.
24. NAME: Richard Castillo  
YEAR GRADUATED: 2007  
THESIS: CT-Based Pulmonary Compliance Imaging in Rodents  
ADVISOR: Thomas Guerrero, M.D., Ph.D.
25. NAME: William Michael Bradley  
YEAR GRADUATED: 2007  
THESIS: Partial Volume Correction of Lung Nodules using PET/CT  
ADVISOR: Osama Mawlawi, Ph.D.
26. NAME: Jaclyn Homnick  
YEAR GRADUATED: 2008  
THESIS: Evaluation of Aluminum Oxide (Al<sub>2</sub>O<sub>3</sub>:C) Optically Stimulated Luminescence (OSL) Dosimeters as a Potential Alternative to Thermoluminescent Dosimeters (TLDs) for Remote Dosimetry Services  
ADVISOR: Geoffrey S. Ibbott, Ph.D.

27. NAME: Annelise Giebeler  
 YEAR GRADUATED: 2009  
 THESIS: Patient Specific Monitor Unit Determination for Patients Receiving Proton Therapy  
 ADVISOR: Wayne Newhauser, Ph.D.
28. NAME: Douglas Caruthers  
 YEAR GRADUATED: 2010  
 THESIS: Commissioning an Anthropomorphic Spine and Lung Phantom for the Remote Validation of Institutions Participating in RTOG 0631.  
 ADVISOR: Geoffrey Ibbott, Ph.D.

### **Ph.D.**

1. NAME: Chien-hua Chu  
 YEAR GRADUATED: 1978  
 THESIS: A Clinical Liquid Ionization Chamber for Mixed Neutron Field Dosimetry  
 ADVISOR: Walter Grant, III, Ph.D.
2. NAME: James R. Marbach  
 YEAR GRADUATED: 1978  
 THESIS: Optimization Parameters for Field Flatness and Central-Axis-Depth Dose for Use in Design of Therapy Electron Beam Generators  
 ADVISOR: Peter R. Almond, Ph.D.
3. NAME: Carlos E. de Almeida  
 YEAR GRADUATED: 1979  
 THESIS: Energy and Spectrum Measurements of High Energy Electrons, Using a Cerenkov Detector  
 ADVISOR: Peter R. Almond, Ph.D.
4. NAME: Thomas H. Kirby  
 YEAR GRADUATED: 1980  
 THESIS: Origin of Residual Potential in Amorphous Selenium Photoreceptors  
 ADVISOR: Alfonso Zermeno, Ph.D.
5. NAME: Amparo Marles  
 YEAR GRADUATED: 1981  
 THESIS: Comparison of Measurement of Absorbed Dose to Water Using A Water Calorimeter and Ionization Chambers of Clinical Radiotherapy Photon Electron Beams  
 ADVISOR: Peter R. Almond, Ph.D.
6. NAME: José A. Bencomo  
 YEAR GRADUATED: 1982  
 THESIS: Study of the Effects of Total Modulation Transfer Function Changes on Observer Performance Using Clinical Mammograms  
 ADVISOR: Dennis A. Johnston, Ph.D.

7. NAME: Benjamin R. Archer  
YEAR GRADUATED: 1984  
THESIS: A Laplace Transform Pair Model to Determine Bremsstrahlung Spectra from Attenuation Data  
ADVISOR: Peter R. Almond, Ph.D.
8. NAME: David E. Mellenberg  
YEAR GRADUATED: 1985  
THESIS: Measurement of Tumor Blood Flow Following Neutron Irradiation  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
9. NAME: Patrick M. Stafford  
YEAR GRADUATED: 1987  
THESIS: Nuclear Track Detector Material as a Fast Neutron Microdosimeter  
ADVISOR: Peter R. Almond, Ph.D.
10. NAME: Almon S. Shiu  
YEAR GRADUATED: 1988  
THESIS: Three-Dimensional Electron Beam Dose Calculations  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
11. NAME: John D. Hazle  
YEAR GRADUATED: 1989  
THESIS: In Vivo Magnetic Resonance Studies of Experimental Liver Disease: Carbon Tetrachloride Hepatotoxicity and Alcohol Induced Fatty Liver in Rat  
ADVISOR: Ponnada A. Narayana, Ph.D.
12. NAME: Edward F. Jackson  
YEAR GRADUATED: 1990  
THESIS: A Dual Resonance, Image-Guided Volume Localization Technique for Magnetic Resonance Spectroscopy  
ADVISOR: Ponnada A. Narayana, Ph.D.
13. NAME: Michael F. Moyers  
YEAR GRADUATED: 1991  
THESIS: A Convolution Model for Energy Transport in a Therapeutic Fast Neutron Beam  
ADVISOR: John L. Horton, Ph.D.
14. NAME: John E. Bayouth  
YEAR GRADUATED: 1993  
THESIS: Dosimetric Evaluation of Bone Marrow Ablation Using Radionuclide Therapy  
ADVISOR: Daniel J. Macey, Ph.D.
15. NAME: Huan B. Giap  
YEAR GRADUATED: 1994  
THESIS: Development of a SPECT-Based Three-Dimensional Treatment Planner for Radionuclide Therapy with Iodine-131  
ADVISOR: Daniel J. Macey, Ph.D.
16. NAME: James C. Falconer  
YEAR GRADUATED: 1995  
THESIS: Quantitative MRI of Spinal Cord Injury in a Rat Model: Correlative Studies  
ADVISOR: Ponnada A. Narayana, Ph.D.

17. NAME: Lei Dong  
YEAR GRADUATED: 1995  
THESIS: Development of Automated Image Analysis Tools for Verification of Radiotherapy Field Accuracy With an Electronic Portal Imaging Device  
ADVISOR: Arthur L. Boyer, Ph.D.
18. NAME: Steven P. McCullough  
YEAR GRADUATED: 2000  
THESIS: A Novel Treatment Planning Methodology for High Dose  $^{166}\text{Ho}$ -DOTMP Therapy in Patients with Multiple Myeloma  
ADVISOR: Richard E. Wendt, III, Ph.D.
19. NAME: Robert A. Boyd  
YEAR GRADUATED: 2001  
THESIS: Pencil-Beam Redefinition Algorithm Dose Calculations for Electron Therapy Treatment Planning  
ADVISOR: Kenneth R. Hogstrom, Ph.D.
20. NAME: Roger Jason Stafford  
YEAR GRADUATED: 2002  
THESIS: Fast Magnetic Resonance Temperature Imaging for Focused Ultrasound Thermal Therapy  
ADVISOR: John D. Hazle, Ph.D.
21. NAME: Peter Balter  
YEAR GRADUATED: 2003  
THESIS: Imaging Properties of Scanning Equalization Digital Radiography: A Simulation Study  
ADVISOR: Chris Shaw, Ph.D.
22. NAME: Brent C. Parker  
YEAR GRADUATED: 2004  
THESIS: Verification of Intensity Modulated Stereotactic Radiotherapy Using Monte Carlo Calculations and EPID Dosimetry  
ADVISOR: Almon S. Shiu, Ph.D.
23. NAME: Kent A. Gifford  
YEAR GRADUATED: 2004  
THESIS: A 3-D CT Assisted Monte Carlo Evaluation of Intracavitary Implants  
ADVISOR: John L. Horton, Ph.D.
24. NAME: Nathan Childress  
YEAR GRADUATED: 2004  
THESIS: The Design and Evaluation of a 2D Verification System for Intensity Modulated Radiotherapy  
ADVISOR: Isaac I. Rosen, Ph.D.
25. NAME: Ted Steger  
YEAR GRADUATED: 2004  
THESIS: Investigation of Arterial Spin Labeling MRI for Quantitative Cerebral Blood Flow Measurement  
ADVISOR: Edward F. Jackson, Ph.D.

26. NAME: Aziz Poonawalla  
 YEAR GRADUATED: 2005  
 THESIS: Multiple Gradient Echo Propeller (MGREP): Technical Development and Potential Applications  
 ADVISOR: X. Joe Zhou, Ph.D.
27. NAME: Dawn Cavanaugh  
 YEAR GRADUATED: 2005  
 THESIS: Assessment of Cone Beam Computed Tomography Techniques  
 Techniques for Imaging Lung Damage in Mice In vivo  
 ADVISOR: Dianna Cody, Ph.D.
28. NAME: Nicholaus Koch  
 YEAR GRADUATED: 2006  
 THESIS: Monte Carlo and Analytical Dose Calculations for Ocular Proton Therapy  
 ADVISOR: Wayne Newhauser, Ph.D.
29. NAME: Jennifer O'Daniel  
 YEAR GRADUATED: 2006  
 THESIS: Image-Guided Adaptive Radiotherapy for Prostate and Head-and-Neck Cancers  
 ADVISOR: Lei Dong, Ph.D.
30. NAME: Stephen Kry  
 YEAR GRADUATED: 2007  
 THESIS: The Development and Validation of a Monte Carlo Model for Calculating the Out-of-field Dose from Radiotherapy Treatments  
 ADVISOR: Mohammad Salehpour, Ph.D.
31. NAME: Rebecca Marsh  
 YEAR GRADUATED: 2007  
 THESIS: Measuring Treatment Response in Irradiated Murine Tumors with Diffusion – Weighted Magnetic Resonance Imaging  
 ADVISOR: John D. Hazle, Ph.D.
32. NAME: Christopher Nelson, PhD  
 YEAR GRADUATED: 2007  
 THESIS: Reduction of Tumor Motion and Setup Uncertainties in the Radiation Therapy of Lung Tumors  
 ADVISOR: George Starkschall, Ph.D.
33. NAME: Pai-Chun Melinda Chi  
 YEAR GRADUATED: 2007  
 THESIS: Thoracic Cancer Imaging with PET/CT in Radiation Oncology  
 AVISOR: Tinsu Pan, PhD
34. NAME: Rebecca Weinberg  
 YEAR GRADUATED: 2007  
 THESIS: Electron Intensity Modulation for Mixed-Beam Radiation Therapy with an X-ray Multi-Leaf Collimator  
 ADVISOR: John Antolak, Ph.D.

35. NAME: Jonas Fontenot  
YEAR GRADUATED: 2008  
THESIS: Proton Therapy Versus Intensity Modulated X-ray Therapy in The Treatment of Prostate Cancer: Estimating Secondary Cancer Risks  
ADVISOR: Wayne Newhauser, PhD
36. NAME: Michael J. Price  
YEAR GRADUATED: 2008  
THESIS: The Imaging and Dosimetric Capabilities of A CT/MR Suitable Anatomically Adaptive, Shielded Intracavitary Brachytherapy Applicator for the Treatment of Cervical Cancer  
ADVISOR: Firas Mourtada, Ph.D.
37. NAME: Venkata Mogatadakala  
YEAR GRADUATED: 2008  
THESIS: In Vivo Diffusion Tensor Imaging of a Rat Spinal Cord with a Phased Array Coil at TT  
ADVISOR: Ponnada Narayana, Ph.D.
38. NAME: Malcolm Heard  
YEAR GRADUATED: 2009  
THESIS: Identification and Characterization of an Optimal Three-Dimensional Dosimetry System for Remote Auditing by the RPC  
ADVISOR: Geoffrey S. Ibbott, Ph.D.
39. NAME: Dustin Ragan  
YEAR GRADUATED: 2010  
THESIS: Measurements of the Vascular Input Function in Mice for DCE-MRI  
MENTOR: Jim Bankson, Ph.D.
40. NAME: Adam Melancon  
YEAR GRADUATED: 2010  
THESIS: Range Adaptive Proton Therapy for Prostate Cancer  
MENTOR: Lei Dong, Ph.D.
41. NAME: Adam Riegel  
YEAR GRADUATED: 2010  
THESIS: Thoracic Radiotherapy Treatment Planning with Cine PET/CT  
MENTOR: Tinsu Pan, Ph.D.
42. NAME: Blake Cannon  
YEAR GRADUATED: 2010  
THESIS: Improving Quantitative Treatment Response Monitoring with Deformable Image Registration  
MENTOR: Lei Dong, Ph.D.
43. NAME: Brian Taylor  
YEAR GRADUATED: 2010  
THESIS: Dynamic Chemical Shift Imaging for Usage-Guided Thermal Therapy  
ADVISOR: R. Jason Stafford, Ph.D.

43. NAME: Brian Taylor  
YEAR GRADUATED: 2010  
THESIS: Dynamic Chemical Shift Imaging for Usage-Guided Thermal Therapy  
ADVISOR: R. Jason Stafford, Ph.D.
44. NAME: Ming Yang  
YEAR GRADUATED: 2011  
THESIS: Dual Energy Computed Tomography for Proton Therapy Treatment Planning  
ADVISOR: Lei Dong, Ph.D.
45. NAME: Rui Zhang  
YEAR GRADUATED: 2011  
THESIS: Quantitative Comparison of Late Effects following Photon Versus Proton External-Beam Radiation Therapies: Toward an Evidence-Based Approach for Selecting a Treatment Modality  
ADVISOR: Wayne Newhauser, Ph.D.

## Medical Physics Tutorials Offered for the 2011-12 Academic Year

<b>FACULTY NAME</b>	<b>TUTORIAL TITLE</b>	<b>PREFERRED OFFERING SEMESTER</b>
Dianna Cody, PhD	TBA	TBA
Thomas Guerrero, PhD	Research/Image Registration	Fall Spring Summer
Ping Hou, PhD	Optimization of Liver Iron measurement by MRI	Fall
	Prostate Perfusion by MRI DCE	Spring Summer
Geoffrey Ibbott, PhD	Use of 3D Dosimetry Systems to Evaluate Complex Dose Distributions such as those produced by IMRT or Proton Therapy	Fall Spring
Edward Jackson, PhD	Functional MR Imaging: Principles and Applications	Fall Spring Summer
S. Cheenu Kappadath, PhD	Evaluate Feasibility of Performing SPECT with Intravenous Contrast CT	Fall Spring Summer
	Issues Involving quantification of SPECT/CT	Fall Spring Summer
	Investigate Acquisition and Reconstruction Trade-Offs in Low-Count SPECT/CT studies	Fall Spring Summer
Stephen Kry, PhD	Monte Carlo Calculation of CT Spectra	Fall Spring Summer
Rajat Kudchadker, PhD	Electron Bolus Therapy for Breast Cancer Patients	Fall Spring
	Fiducial IGRT for Prostate Patients	Fall Spring
Jingfei Ma, PhD	Fast MRI for Abdominal Imaging	Fall Spring Summer
Osama Mawlawi, PhD	PET/CT Imaging	Fall Spring Summer
Radhe Mohan, PhD	A Proton Project	Fall Spring

Firas Mourtada, PhD	Eclipse Auros XB for External Beam	Fall Spring Summer
	Brachytherapy Research	Spring
Jason Stafford, PhD	Modeling and Simulation of MR-guided Laser Ablation (with and without nanoparticle assisted heating)	Fall Spring Summer
	Fast Chemical Shift Imaging for MR-guided interventions	Fall Spring Summer
	MRI-guided Interventions (biopsy and ablation)	Fall Spring Summer
Titt Uwe, PhD	Introduction to Monte Carlo simulations. Project: Collimator Application in Scanned Beam Proton Therapy	Fall
Jihong Wong, PhD	Diffusion Tensor Imaging: Application in Assessing Brain Tumor Response to Therapy	Fall Summer

\*Tutorials from other faculty who have not yet made definite plans may be available.

## Course Descriptions and Fall 2011 Semester Schedule of Classes:

- Physics of Positron Emission Tomography
- Fundamental Biological Principles of Molecular Imaging and Therapeutics
- Special Radiation Treatment Procedures
- Principles of Magnetic Resonance Imaging
- Biomedical Signal Processing
- Radiation Biology
- Radiation Detection, Instrumentation, and Data Analysis
- Introduction to Medical Physics I: Basic Interactions
- Introduction to Medical Physics II: Medical Imaging
- Introduction to Medical Physics III: Therapy
- Introduction to Medical Physics IV: The Physics of Nuclear Medicine
- Introduction to Radiation Protection
- Anatomy and Oncology for Medical Physicists
- Introductory Radiation Therapy Physics Rotation
- Introductory Diagnostic Imaging Rotation
- Mathematics for Medical Physics
- Electronics for Medical Physicists
- Medical Physics Seminar

### **GS020012 Physics of Positron Emission Tomography**

Mawlawi. Two semester hours. Summer biennially. Prerequisite: Consent of instructor

This course will focus on advanced Positron Emission Tomography (PET) physical principles, image formation and processing, and image correction techniques, as well as lay the foundations for understanding tracer kinetic modeling. Students will obtain hands on experience with PET imaging and data analysis. The use of PET imaging in various medical and research applications will be presented.

### **GS020014 Fundamental Biological Principles of Molecular Imaging and Therapeutics**

Jackson. Four semester hours. Spring annually. Prerequisite: Consent of instructor.

This covers the biological principles that form the basis for molecular imaging and therapeutics. It is an introductory course that assumes that the student has completed at least one year of general chemistry and, preferably, at least one semester of biology. It is assumed that the student has a firm understanding of calculus and ordinary differential equations. Topics covered include the fundamental aspects of biochemistry, cell biology, and cancer biology needed to appreciate and understand critical concepts in the applications of modern molecular imaging and therapeutics. Applications and examples of key concepts to molecular imaging and/or therapeutics are provided throughout the course. The course is designed for students in the Medical Physics Program, but is also open to students in other programs who are in need of an introduction to molecular and cellular biology.

### **GS020022 Special Radiation Treatment Procedures**

Dong. Two semester hours. Summer annually. Prerequisite: Introduction to Medical Physics I (GS020093), Introduction to Medical Physics III: Therapy (GS020113), and Introductory Radiation Therapy Physics Rotation (GS020154).

The main goal of this course is to introduce students about special radiation therapy or image-guided therapy procedures that are considered "non-routine" or in "advanced" form relative to the current clinical practice and may require special consideration in the preparation and execution. Special procedures are important clinical services which are usually provided directly by the clinical medical physicist. The special procedures selected in this course may change overtime. Currently, the following topics are included: intra-operative HDR; stereotactic radiosurgery and radiotherapy; image-guided radiotherapy procedure; total skin and total body irradiation techniques; fetal and pacemaker dosimetry; commissioning of IMRT planning systems; 4D CT imaging procedures; and tomotherapy treatment techniques..

### **GS020032 Principles of Magnetic Resonance Imaging**

Jackson. Two semester hours. Summer biennially. Prerequisite: Introduction to Medical Physics II: Medical Imaging (GS020103) or consent of instructor

The goal of this course is to provide a comprehensive understanding of the physics involved in magnetic resonance imaging (MRI), and prepare the students to carry out research or practice medical physics in this area. The topics include basic spin physics, contrast mechanisms, hardware, data acquisition, image reconstruction, and artifact recognition. Emphasis will be placed on practical issues encountered in research and clinical applications.

### **GS020033 Biomedical Signal Processing**

Liang. Three semester hours. Spring annually. Prerequisites: Access to the internet, general knowledge of calculus and basic statistics, or consent of instructor.

This course is aimed at the applications of modern signal processing techniques in biomedicine. This course covers the basics of biomedical signals including EEG, ECG, EMG and medical imaging, and introduces various widely used signal processing techniques. This course is for graduate students who are interested in quantitative studies of biological systems.

### **GS020042 Radiation Biology**

Ibbott. Two semester hours. Fall annually. Prerequisite: Consent of instructor.

Fundamentals of radiation biology for graduate students of biophysics, radiation biology or medical physics.

### **GS020053 Radiation Detection, Instrumentation, and Data Analysis**

Titt. Three semester hours. Spring annually. Prerequisite: Introduction to Medical Physics I (GS020093) or equivalent and consent of instructor.

A study of the characteristics and applications of charged particle, photon, and neutron detectors will be covered. Modular analog and digital electronics required for signal processing and data recording will be used. Techniques of data analysis and error propagation of counting statistics will be introduced. The course will include two lectures and one laboratory exercise weekly.

The applications of radiation detectors in radiotherapy, health physics, nuclear medicine, and radiobiology will be emphasized.

### **GS020093 Introduction to Medical Physics I: Basic Interactions**

Starkschall. Three semester hours. Fall annually. Prerequisite: Consent of instructor

This semester covers the basic interactions of ionizing and non-ionizing radiation important in medicine. Topics include photon, electron, and neutron interactions, high LET radiation, radioactivity, ultrasound interactions, and laser interactions.

### **GS020103 Introduction to Medical Physics II: Medical Imaging**

Shaw. Three semester hours. Spring annually. Prerequisite: Introduction to Medical Physics I (GS020093).

The physical principles and instrumentation of medical imaging are presented for medical imaging modalities. The course includes conventional x-ray radiology, digital radiography, computed tomography, ultrasound, and magnetic resonance imaging.

### **GS020113 Introduction to Medical Physics III: Therapy**

Salehpour. Three semester hours. Spring annually. Prerequisite: Introduction to Medical Physics I (GS020093).

The physics of treatment modalities to include external beam radiotherapy, brachytherapy, and internal emitters will be discussed. The necessary therapy equipment will be described with methods of calibration, dose specification and dose prescription. The effects of machine geometry and patient anatomy on dose calculations will be discussed. Machine calibration and quality assurance procedures are emphasized.

### **GS020193 Introduction to Medical Physics IV: The Physics of Nuclear Medicine**

Wendt. Three semester hours. Spring annually. Prerequisite: Introduction to Medical Physics I (GS020093), Radiation Detection, Instrumentation, and Data Analysis (GS020053), and consent of instructor.

This course introduces graduate students to the basic science of nuclear medicine. It presents scientific principles underlying radionuclide organ imaging methods.

### **GS020133 Introduction to Radiation Protection**

Kudchadker. Three semester hours. Summer odd-numbered years. Prerequisite: Radiation Detection, Instrumentation, and Data Analysis (GS020053) or consent of instructor.

The science of radiation protection including terminology, biological effects, shielding dose limits and dose measurement will be studied. The role of state and federal enforcement agencies will be discussed. The application of radiation protective concepts in a medical environment will include room design, isotope handling, instrumentation calibration and room surveys.

### **GS020142 Anatomy and Oncology for Medical Physicists**

Jones. Two semester hours. Fall annually. Prerequisite: none.

An introduction to medical terminology and concepts in anatomy, radiology, pathology, and treatment are provided for the medical physicist. Anatomy in the head and neck, thorax, abdomen, and pelvis is taught in order to understand CT and MRI scans and the pathology and treatment of cancer in these regions.

### **GS020154 Introductory Radiation Therapy Physics Rotation**

Beddar. Four semester hours. Spring and Fall annually. Prerequisite: Introduction to Medical Physics III (GS020113) and consent of instructor.

This course provides the student the opportunity to obtain his/her first clinical exposure to radiotherapy. The student will observe and participate in dosimetry clinics and be asked to perform routine duties in dosimetry. The student will calibrate radiation beams, perform quality assurance tests, observe patient treatments, and do treatment planning in both brachytherapy and external *beam*.

### **GS020174 Introductory Diagnostic Imaging Rotation**

Willis. Four semester hours. Summer and Fall annually. Prerequisite: Introduction to Medical Physics II (GS020103), IV (GS020193), and consent of instructor.

This rotation provides the student the opportunity to obtain clinical and practical exposure to diagnostic imaging and physics practices. In addition to the observation of diagnostic studies in radiology (e.g., general radiology, CT, MRI), ultrasound and nuclear medicine, performance of specific calibration and quality-assurance equipment measurements is required of the student. The student will observe patient diagnostic studies, observe the performance of radiological diagnosis, perform calibration and quality assurance tests on diagnostic imaging equipment.

### **GS020183 Mathematics for Medical Physics**

White. Three semester hours. Fall annually. Prerequisite: 9 hours or equivalent of calculus and/or analysis and completion of admission deficiencies.

Brief review of calculus, linear algebra, and complex variables. Statistical theory and methods appropriate to medical and physical sciences are covered. The course also covers convolutions, transforms, modulation transfer functions and numerical methods.

### **GS020203 Electronics for Medical Physicists**

Bankson. Three semester hours. Fall annually. Prerequisite: Undergraduate electronics course covering basics of analog and digital circuits, or consent of instructor

This course emphasizes the analog and digital electronics associated with scientific instrumentation, particularly as related to medical physics technology. Topics include review of analog DC and AC circuit analysis and the use of voltage regulators, filters, polyphase circuits, and operational amplifiers in medical physics instrumentation. The production and detection of RF signals and shielding/grounding techniques for noise reduction will be addressed. Digital logic and components, including gates, flip-flops, ADCs, and DACs, will be reviewed and their use in medical physics instrumentation will be discussed. Common microprocessor interfaces and computer networking schemes will also be reviewed.

### **GS020731 Medical Physics Seminar**

Almond (Fall) and TBD (Spring). One semester hour. Fall and Spring annually. Prerequisite: none.

In the Fall semester students present talks upon selected topics general medical physics, therapy, and medical imaging. The objectives are to provide acquaintance with a wide range of Medical Physics topics and to develop speaking skills. In the Spring semester faculty and staff speak to students about ongoing research and research opportunities for students. The objectives are to familiarize the student with ongoing research and to assist them in selecting research topics.

# 2011 Fall Semester Course Schedule: GSBS Medical Physics Program

Semester Begins: Monday, August 29, 2011 Semester Ends: Friday, December 16, 2011

Final Exam Week: December 12-16, 2011

Course No.	Title	Day	Time	Room	Primary Instructor
GS000610	Special Project Course: Peer Instruction in the Teaching of Medical Physics	MW	9:00 – 10:00 AM	MDACC FCT14.5045	Dr. Starkschall (713) 563-2537
GS020203	Electronics for Medical Physics	TuTh	8:00 – 9:30 AM	MDACC FCT14.5059	Dr. Bankson (713) 792-4273
GS020093	Intro Med Phys I: Basic Interactions:	MWF	2:45 – 3:45 PM	GSBS BSRB3.8371	Dr. Starkschall (713) 563-2537
		Th	2:15 – 3:15 PM	MDACC FCT14.5059	Dr. Gifford (713) 563-2596
		Th	3:30 – 4:30 PM	MDACC FCT14.5059	Dr. Stafford (713) 563-5082
GS020142	Anatomy & Oncology for Medical Physicists	MW	1:15 - 2:15 PM	MDACC FCT14.5059	Dr. Jones (713) 563-0552
GS020183	Math for Medical Physics	MWF	10:15 – 11:15 AM	MDACC FCT14.5059	Dr. White (713) 792-2616
GS020042	Radiation Biology	MW	8:00 – 9:00 AM	GSBS BSRB3.8371	Dr. Ibbott (713) 745-8989
GS020731	Medical Physics Seminar	TH	1:15 – 2:15 PM	GSBS BSRB3.8371	Dr. Almond (713) 563-2721
GS020174	Introductory Diagnostic Imaging Clinical Rotation	TBD	TBD	TBD	Dr. Willis (713) 563-2609
GS020154	Introductory Radiation Physics Clinical Rotation	TBD	TBD	TBD	Dr. Beddar (713) 563-2609
GS210051	The Ethical Dimensions of Biomedical Sciences	M	12:00 – 1:00 PM	GSBS TBD	Dr. Erwin (713) 500-5963

## FINAL EXAMS

Date/Day	Course	Location	Time	Instructor
12/12/11 – Monday	Radiation Biology	FCT3.4166 (1) & FCT3.4165 (8)	8 - 11 AM	Dr. Ibbott
12/13/11 – Tuesday	Electronics for Medical Physics	FCT14.5059	9 - 12 Noon	Dr. Bankson
12/14/11 – Wednesday	Introduction to Medical Physics I: Basic Interactions	FCT3.4166 (2) & FCT3.4165 (7)	1 - 4 PM	Dr. Starkschall
12/15/11 – Thursday	Anatomy & Oncology for Medical	FCT14.5059	1 – 4 PM	Dr. Jones
12/16/11 – Friday	Math for Medical Physics	FCT14.5059	1 – 4 PM	Dr. White

## GSBS Holidays for Classes

Labor Day: September 5, 2011

Thanksgiving: November 24-25, 2011

# Committee Meetings

## Section Topics

- The Two M.S. Committees
- The Three Ph.D. Committees
- Choosing Committee Members
- GSBS Academic Standards Committee Approvals
- When to Form Advisory Committee
- Composition of Advisory Committee
- Purpose of First Advisory Committee Meeting
- Examining Committee
- Supervisory Committee
- Scheduling Committee Meetings
- Preparing for Committee Meetings
- Committee Meeting Reports

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## THE TWO M.S. COMMITTEES

### Advisory Committee

This committee will advise you as you begin your thesis project. Your first advisory committee meeting should take place as early as the summer semester of your first year.

### Supervisory Committee

After you advance to candidacy, this committee oversees your progress for the remainder of your graduate training. The membership of your Supervisory Committee can be the same as on your Advisory Committee.

## THE THREE PH.D. COMMITTEES

During your graduate career, you will assemble three separate committees. Each committee is formed for a specific purpose and can be composed of a different mix of faculty.

### Advisory Committee

This committee will advise you as you begin your thesis project through the time you finish your required coursework and are ready to take the PhD Oral Exam. Your first advisory meeting should take place in the summer of your first year or early fall of your second year.

### Examining Committee

This committee administers the PhD Oral Exam, which you should take in the summer semester of your second year or the fall semester of your third year. At least two members of your Advisory Committee must be replaced when forming the Examination Committee and your advisor cannot be a member of the Examination Committee and cannot be present during the examination.

## Supervisory Committee

After you advance to candidacy, this committee oversees your progress for the remainder of your graduate training. The members of your Supervisory Committee can be the same as those on your Advisory Committee, if desired.

## Choosing Committee Members

A minimum of 3 medical physics faculty members (including your advisor) must be on each of your 3 committees. The composition of these committees will be an important contributor to your overall success since the committees oversee all aspects of your training. Thus, it is important to choose faculty who can best help you achieve your academic and experimental goals. Seek your advisor's help in this process since he/she is likely to know more of the faculty than you, especially as you start your studies. The GSBS staff is also helpful in this process. Other students, especially those in your lab, may have good advice as well.

The GSBS has very specific requirements regarding the composition of your committees and all of them must be approved by the GSBS Academic Standards Committee. Visit their website for a description of each committee: <http://www.uthouston.edu/gsbs/current-students/academics/faq/#id> Note that at least one member of each of your committees must have substantial prior GSBS experience on such committees.

Try to choose well-balanced committees that include experts in your research area, experts in the techniques and approaches you are likely to use, as well as outside members who will lend a fresh perspective to your ideas and approaches. Your "outside" members need to be outside your area of research. We strongly suggest that you discuss your selection of outside members with your advisor and the Program Director, who must approve all committee proposals prior to submission of the requirement documents to the GSBS Academic Standards Committee (ASC).

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 all three of your committees, to lend some consistency to your graduate studies. These "long-term" committee members will become extremely familiar with you and with all aspects of your training. This is a factor that becomes critically important when soliciting letters of recommendation for post-doctoral applications, fellowship applications, or other career purposes.

## GSBS Academic Standards Committee Approval (ASC)

The ASC requires that all forms submitted to it for evaluation be **typed** (not handwritten), e.g., Advisory/Supervisory Committees, Petitions for Candidacy, etc. These forms are all available on the "Forms" page of the GSBS website.

From the "FAQs" section of the GSBS website (7/1/11):

*"All committees must be approved by the GSBS Academic Standards Committee, which meets the second Wednesday of every month. All faculty members who wish to serve on committees for Ph.D. students and M.S. students must serve at a faculty or staff level at their home institution. If a proposed member of any of the following committees is not a GSBS faculty member, the ASC has requested that a 2-3 page NIH-style biosketch be submitted to the OAA with the committee application."*

## When to Form Your Advisory Committee

You should form your advisory committee by end of summer semester in your first year and schedule your first meeting within 1-2 months of ASC approval. For most students, the first advisory meeting will be held during the fall semester of the second year or summer semester of the first year. Remember, GSBS has very specific guidelines governing the composition of all three committees, and the Academic Standards Committee must approve your proposed members, along with the Medical Physics Program Director. Instructions on forming all committees are in the “Commonly Used Forms” section of the GSBS website: <http://www.uthouston.edu/gsbs/currentstudents/academics/forms/>.

## Composition of Advisory Committee

Advisory Committee guidelines from the “Policies & Procedures/Student Committees” section of the GSBS website (7/1/11):

- The Advisory Committee consists of at least five Faculty members, including the student’s Advisor, chosen to assure representation by faculty members competent in the student’s major area of research.
- At least one member’s research interests must lie **outside** the student’s major discipline.

### **The identification of members “outside the student’s major discipline” in the selection of advisory committees**

The Academic Standards Committee (ASC) spends a significant amount of time determining whether proposed GSBS student committees meet the first of the requirements for committees, which states: “At least one member’s research interests must lie outside the student’s major discipline...” In the past, the ASC has approved “outside members” whose research areas were not too different from those of the student and other members. While this is not a major problem for supervisory and examining committees of Ph.D. candidates, the ASC feels that a lack of breadth is inappropriate for committees of less advanced students.

To ensure that this policy is implemented uniformly, the ASC recently formulated the following guidelines for the committees of GSBS students who have not yet advanced to candidacy for the Ph.D. **The phrase “outside the student’s major discipline” means someone who has had training and research experience in an area that is substantially different from that proposed by the student, and it does not necessarily depend on what type of research that person is doing at the current time.** Indeed, a collaborator of the student or the advisor could serve as an outside member, if he or she met the other criteria.

“Major disciplines” are not synonymous with Departments or Programs, but “outside members” are not ordinarily members of the same Department/Program as the student. In a particularly broad or diverse Department/Program, however, there may be members who represent different disciplines entirely, and “outside members” could be drawn from within the Department/Program. To fulfill the requirements, in that case, the committee must also have one member from a different Department/Program. It needs to be re-emphasized here that a faculty member from another Department/Program who works in the same area as the student is not qualified to be an “outside member”. Specific to the Medical Physics Program, radiation oncologists and radiologists are **not** considered by the ASC to be outside members. For

medical physics students, it is not common, but not required, for the outside member to be a member of the Biomathematics and Biostatistics Program.

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 began with a brief general introduction describing the problem they plan to study. The ASC feels that this experience would also be valuable to the students, preparing them for other presentations to general audiences and helping them to organize their thoughts about the significance of their work.

- Individuals outside the GSBS faculty may serve on a student's committee, but there may be no more than two such individuals on a committee. **Include an NIH format biosketch for all proposed members who are not GSBS faculty.**
- All GSBS faculty members on a committee may not come from the same Department or Program. If four members are from the same Department or Program, the fifth member outside the Department or Program must be a GSBS faculty member. If a committee has non-GSBS faculty, the faculty who are GSBS faculty may not be from the same Department or Program.
- The advisor must be a Regular member of the GSBS faculty if a mentor to a Ph.D. student. 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. This 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 First Advisory Committee Meeting**

Your first advisory meeting is a time for you and your committee to get to know one another. You should schedule it during the summer of your first year or, at the latest, in the fall of your second year. This is very important so that your committee can meet you, advise you on courses, and provide input on your proposed research project.

While it is not necessary to have data to present at your first committee meeting, your committee will expect you to make a short 20-30 minute presentation on the background of your project, your research plans for the next six months, and long term goals. The emphasis should be placed on your plans for the next six months. It is highly recommended that you review your presentation and slides with your advisor prior to your committee meeting.

### **What to bring to your first advisory meeting** (*enough copies for all committee members*)

- Your CV or NIH-style biosketch that includes your prior education, degrees received, honors received and any publications you have.
- Rotations you completed.
- A list of all GSBS classes you have taken and your grades.
- GSBS courses you plan to take.
- A written summary of your proposed research plan (2-3 pages). This should include an introduction, a simple description of your plan, and your goals for the next six months. Your summary should be sent to your committee members in advance of the meeting. Remember, it is not necessary to present data at this meeting.

- Your presentation slides.

At subsequent meetings, you should always provide a written summary of your research and future plans. It is helpful to remind the committee how long you have been a GSBS graduate student, and to inform them of any new publications, courses, etc.

## Examining Committee

You will need to form your examining committee before petitioning to take your Ph.D. candidacy exam. The Medical Physics Program Director must approve your examining committee prior to your submission of the petition to the GSBS Academic Standards Committee. Keep in mind the following requirements when selecting your members:

- Your committee must include five faculty members, with at least two who have not served on your advisory committee.
- At least three of the five must be Medical Physics faculty members.
- **The chair of your examining committee must be a member of the Medical Physics faculty.**
- All of the members may not come from the same department or the same GSBS program.
- One member must be from an area of research outside your primary area of interest.
- Individuals outside 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/Program, the fifth member outside the Department/Program must be a GSBS faculty member.
- Your Ph.D. advisor is not allowed to be a member of your examining committee, or even in the room during the exam.

## Supervisory Committee

- Must consist of at least five members, including the student's Advisor, chosen to assure representation in the student's major area of research.
- At least one member's research interest must lie outside the student's major discipline.
- Individuals outside the GSBS Faculty may serve on a student's committee, but there may be no more than two such individuals on a committee. **Include an NIH format biosketch for all proposed members who are not GSBS faculty.**
- All five members may not come from the same Department/Program. If four members are from the same Department/Program, the fifth member outside the Department/Program must be a GSBS faculty member.
- If the student received a conditional pass on the Ph.D. oral candidacy examination, the Chair of the Examining Committee must serve on the Supervisory Committee, at least until the conditional pass has been resolved.
- The advisor must be a regular member of the GSBS Faculty.
- There will be no co-advisors or co-chairmen.
- At least one member of the committee must be a GSBS faculty member with extensive GSBS Advisory Committee experience. This experienced member is charged with advising the student regarding GSBS policies and deadlines, and, if necessary, with mentoring inexperienced advisors on GSBS policies.

The composition of the Supervisory Committee must be approved by the Program (and this form signed by the Program Director) prior to submission of this form to the Office of Academic Affairs.

## Supervisory Committee – Ph.D

From the “Requirements for the Ph.D.” section of the GSBS website (7/1/11):

*“Within three months of the pass or conditional pass of the candidacy examination, the student, with the assistance of the Advisor, proposes a Supervisory Committee and submits the form to the ASC for its approval. Upon approval by the ASC and the Dean, the Supervisory Committee is notified of its appointment and informed of any conditions placed on the student by the Examining Committee. If the student receives a conditional pass, the Chair of the Examining Committee must serve as a member of the Supervisory Committee, at least until the conditional pass has been resolved.”*

## Supervisory Committee Composition

Your supervisory committee can have the same members as your advisory committee, depending on the focus of your project. These guidelines are from the “Policies & Procedures/Student Committees” section of the GSBS website (7/1/11).

- The Supervisory Committee consists of at least five faculty members, including the student's Advisor, chosen to assure representation by faculty members competent in the student's major area of research.
- At least one member must have research interests which lie outside the student's major discipline.
- All of the members may not come from the same department or the same GSBS Program.
- The same person may meet all “outside member” requirements.
- Individuals outside 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/Program, the fifth member outside the department/Program must be a GSBS faculty member.
- If two members of the committee are non-GSBS faculty, the other three GSBS faculty members may not be from the same department or Program.

## Scheduling Committee Meetings

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

## How to Contact Your Committee

The best way to contact your committee members and set up a meeting is through your mentor's support personnel or by emailing your committee directly.

Approximately two months prior to the time you want to schedule the meeting (the earlier the better), email your mentor's support person to arrange the meeting or contact your committee members directly. Keep in mind that meetings during holiday periods and the summer months are more difficult to schedule.

If a faculty member does not reply within one week, follow up with a phone call or a visit to his or her office. If you cannot find a time in your original two-week period when everyone can meet, adjust the time frame accordingly and send out another round of emails.

### **Scheduling Difficulties and Cancellations or “no shows”**

If it turns out to be very difficult to find a time when all committee members can meet, it is possible to hold your meeting with one member absent. However, be sure to first ask your advisor if this is OK. If it is, then check with the person who can't attend to make sure it is OK with him or her to miss the meeting. After the meeting, be sure to check back with the missing member to discuss what happened. The exception to this is for your candidacy exam and thesis defense, at which all committee members should be present. Note – the GSBS has guidelines regarding committee member substitutions when necessary. Remember, the earlier you begin scheduling, the more likely you will be able to find a time when everyone is available. It is unrealistic to wait until a few days before you want to have a meeting and expect to find a time when five busy people are all available.

### **Reserving a Meeting Room**

Contact your advisor's support staff or a departmental administrative assistant to reserve a room for your meeting. While most committee meetings should take 1.0–1.5 hours, reserve a room for two hours to provide ample time for set-up before the meeting and a discussion after your presentation.

### **Meeting Confirmation and Reminders**

After the room is reserved, send another email to your committee members to confirm the date, time and room number for your committee meeting. Also send a reminder email to your committee a few days before the meeting with your research summary attached, and then a final reminder one day before.

### **Written Research Summary**

For your first advisory meeting, as stated previously, a simple description of your proposed research plan should follow the introduction. 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 you stated at your previous meeting.

Remember, your goals are not contracts; they are simply to help you plan the next six months. Do not feel that you must complete all the goals listed at one meeting before scheduling the next. Your committee expects that unforeseen problems or changes in your research directions will occur.

### **Presentation Guidelines**

For each committee meeting, you should prepare a 35-45 minute talk summarizing the background of your project, research goals and progress. You can review your presentation with your advisor prior to the meeting.

The content of the talk should largely follow the written research summary submitted to the committee. Review the specific experiments you have done since the last meeting and end with your goals for the next six months. Keep in mind that you do not have to present every experiment you have performed or every project that you have started. Keep the presentation focused on the major goals for your thesis.

During your presentation, committee members may ask for clarification of your experimental approach or your results. Make good slides for your presentation. Ask your advisor for advice on making the slides. All data should be clearly labeled and diagrams outlining the experiment are often helpful.

After your presentation, the committee will likely ask additional questions to initiate a discussion of the quality of the data, your interpretations, alternative approaches, etc. You should take notes of experiments, alternatives, criticisms, etc. offered by the committee during this time.

If you prepare your presentation well and are familiar with your research topic, most committee meetings should take 1.0 to 1.5 hours.

At the conclusion of each meeting, you should have a clear view 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 make sure you understand the committee's recommendation(s) and make sure, with your advisor's assistance, that there is a consensus among the committee members regarding such recommendations.

### **Committee Meeting Reports**

Within one week of each meeting, the Student and the Advisor (Chair of the Committee) should complete the GSBS "Report of Advisory/Supervisory Committee Meeting" form, sign it, and submit it to the Office of Academic Affairs, GSBS, 3.8344 BSRB. Student should complete their section and sign the form prior to the Advisors completing their portion and signing the form. A copy of this report should be sent to each member of the Committee and to the student. If either the student or Advisor needs additional space to add comments, they should be typed on a continuation page.

This form is on the GSBS website under "Committee Forms" at the top of this page:  
<http://www.uthouston.edu/gsbs/current-students/academics/forms/>

This report is the only official record of your committee meeting, so it is very important that the GSBS receives the report in a timely manner. If you do not receive a copy of the report within one week of your committee meeting, ask your advisor when it will be available.

# Medical Physics Ph.D. Candidacy Exam

## Section Topics

- Overview
  - Petition for Ph.D. Candidacy Exam
  - Exam Timeline
  - Examining Committee
  - Current Topics in Medical Physics – Spring Semester
  - Reserving Rooms
  - Off-Topic Abstracts
  - Written Research Proposal
  - Examination and Outcomes
  - GSBS Evaluation Rubrics
  - M.S. Bypass
  - GSBS Candidacy Forms
- 

## Overview

In order to advance to candidacy for a Ph.D. degree, you must first pass the Medical Physics written candidacy exam. Typically, this written exam is taken at the start of the summer semester of a student's second year. However, the written exam can be taken as early as the third semester following matriculation. In addition to passing the written candidacy exam, the student must submit one manuscript as first author to a peer-reviewed journal and pass the oral candidacy examination. (This manuscript submission requirement is **above and beyond** the GSBS required submission of a manuscript prior to defense of dissertation.)

The Medical Physics Program utilizes the “on topic” proposal format for the PhD Oral Exam. The PhD Oral Exam consists of writing and providing your NIH style original research proposal to your PhD Oral Exam Committee followed by an oral defense of the proposal.

## Petition for Ph.D. Candidacy Exam

You must petition the GSBS Academic Standards Committee (ASC) for approval to take the candidacy exam. Remember, all forms submitted to the ASC must be typed. Prior to seeking ASC approval, you must obtain approval from your Advisory Committee to take the exam, write your summary of your dissertation research (see petition form), have completed all your required GSBS coursework, and obtain the signature of the Program Director on your petition. **You are required to submit your petition to the GSBS Office of Academic Affairs no later than one week prior to the next ASC meeting.** The ASC meetings are held the second Wednesday of each month.

The candidacy petition, related forms and information are posted on the GSBS website under “Petition for the Ph.D. Candidacy Examination”: <http://www.uthouston.edu/gsbs/current-students/academic/forms/>. See next page for a complete list of posted documents.

## Petition Documents on GSBS Website

- “Petition for the Ph.D. Candidacy Exam” (signed by all advisory committee members).
- “Template for Specific Aims Page for Petitions for Candidacy” (suitable for ASC approval, this will help you prepare your specific aims for your summary of your dissertation project that you will submit with your petition).
- “Ph.D. Examining Committee” (initialed by all examining committee members and signed by the Medical Physics Program Director).

- “Code of Conduct and Pledge Form”

## Summary of Proposed Dissertation Research

You need to prepare a one-page summary of your proposed dissertation research for your final advisory meeting, which is where you will request approval to take the candidacy exam (summer meeting). You will also attach this summary to your Petition for the Candidacy Exam that you will submit to the Academic Standards Committee. It should include a brief background, a clearly stated hypothesis, specific aims and the methods by which the aims will be carried out. Guidelines for this summary are in the GSBS “Template for Specific Aims Page for Petitions for Candidacy”.

## Exam Timeline

The timeline for taking the candidacy exam depends on the term in which you matriculate at GSBS. There are two deadlines to keep in mind: (1) the deadline to petition for Ph.D. candidacy, and (2) the deadline to take the exam. These deadlines are GSBS requirements, not Medical Physics Program requirements. Please note that you cannot take the exam until you have completed all GSBS area course requirements.

## GSBS Candidacy Petition Note

From the “Requirements for the Doctor of Philosophy Degree” on the GSBS website (6/1/10), *“students who matriculated prior to the Fall term of 2008 must petition for Ph.D. candidacy before the end of the first semester of the third year of admission to the Ph.D. program (before the end of the second year if the student previously has earned an M.S. degree or one year after an M.S. has been completed at GSBS). Students who matriculated in the Fall 2008 term or thereafter must petition for Ph.D. candidacy by the end of the second year following matriculation.*

## Examining Committee

Your examining committee must first be approved by the Medical Physics Program Director and then by the GSBS Academic Standards Committee. The paperwork should be initiated early to avoid unnecessary delays in forming this committee. Keep in mind the following requirements when selecting your members:

- Your committee must include five faculty members, with at least two who have not served on your advisory committee.
- The chair of your examining committee must be a member of the Medical Physics faculty.
- At least two of the five must be Medical Physics faculty members (this is a Medical Physics requirement).
- All of the members may not come from the same department or the same GSBS program.
- One member must be from an area of research outside your primary area of interest.
- Individuals outside 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/Program, the fifth member outside the Department/Program must be a GSBS faculty member.
- Your Ph.D. advisor is not allowed to be a member of your examining committee, or even in the room.

## Reserving a Room for the Exam

You will need to schedule a room for a two-hour block of time for your candidacy exam (this does not include set-up time).

## Guidelines for the Written Research Proposal

The student will write a full 10-15 page NIH style research proposal for a project of 2-3 years in duration. This proposal should be based on the student's own ideas without any input about the research plan from the advisor. The written proposal will be given to the exam committee two weeks in advance. At the same time, the proposal should be submitted to the GSBS Office of Academic Affairs for analysis by Turnitin. (The GSBS reserves the right to check proposals using other databases as they become available). The written proposal shall consist of:

- **Abstract.** The abstract should be one to two pages, and should clearly state a hypothesis, and specific aims that will experimentally test the hypothesis.
- **Background and Significance.** This should be four to five pages. This section should introduce the reader to the topic, experimental system and identify where there are gaps in our knowledge. This section should also form the foundation on which the experimental plan will be developed.
- **Research Design and Methods.** This should be five to seven pages in length. This section should be a detailed description of the experiments that will be performed. This should include experimental design (without the need, in most cases, to include buffer conditions, etc.), how data will be collected, interpreted and what expected outcomes are. In addition, the student will need to provide a rationale for the aim and alternative approaches to obtain results should the student's first approach fail.
- **Literature Cited.** This section is not included in the page count. The student should cite the literature used in the development of the proposal. All citations should be complete, containing authors, article title, journal name, volume and pages.
- **Figures, Images, Schematic Drawing.** Students are encouraged to use figures in their proposals wherever they feel it will help the reader to better understand the application. Images taken directly from others should be used only when necessary to illustrate previous findings and should be accompanied by a clear citation of the source. Schematic diagrams should be generated by the student.

The proposal should be a maximum of 15 pages. The format of the proposal follows GSBS guidelines posted on their website (<http://www.uthouston/gpbs/current-students/academics/policies/policies/phd-requirements.htm>); it is essentially a version of an NIH R01 Research Plan. As you will see from the tips below, you are not required to produce extensive preliminary data in support of your proposal. However, you are expected to provide evidence (from the literature or your own work) that the approach to be used is feasible.

### Assistance Guidelines

The proposal should be prepared by the student without assistance from any faculty member.

#### *Tips for the Preparation of a Successful Ph.D. Candidacy Proposal*

*"It is the student's responsibility to submit a Research Plan in the form of a research grant proposal [consisting of] Title, Abstract (350 words or less), Specific Aims, Background and Significance, Research Design and Methods, and References as follows:"*

Some students unnecessarily delay scheduling their exam because they feel that they have generated insufficient preliminary data. The main purpose of the Research Proposal is to demonstrate a student's ability to formulate a hypothesis and the means by which to test it. While students may use their own preliminary data to justify their hypothesis, it is perfectly acceptable to invoke published results (not necessarily from their own lab!) to support their postulate.

***"Specific Aims: State concisely and realistically what the research is intended to accomplish and/or what hypothesis is to be tested. Do not exceed one page."***

***"Background and Significance: Briefly sketch the background to the present proposal, critically evaluate existing knowledge, and specifically identify gaps which the research is intended to fill. State concisely the importance of the research by relating specific aims to longer term objectives. Do not exceed three pages."***

***"Research Design and Methods: Briefly summarize the experimental design and the procedures to be used to accomplish the specific aims of this research. Include a description of the types of data to be obtained and how they will be analyzed to accomplish the specific aims." Six to ten pages -- the entire proposal should not exceed 15 pages.***

Frequently, students concentrate too much on methodological details and devote too little effort to data interpretation. This is an easy trap to fall into because most students at this stage are just becoming familiar with techniques and the natural tendency is for their proposals to be dominated by these details. If committee members need details on experimental design, these can be provided orally during the exam. Importantly, candidates should emphasize how their experiments will test their hypotheses. It is also essential to include a discussion of the pitfalls of your strategies.

## **Proposal Writing Tips**

### **GSBS Writing Tips**

General tips for formatting a research proposal are available on the GSBS website:

<http://gsbs.uth.tmc.edu/policies/proposal.html>

### **M.D. Anderson Scientific Publications Writing Tips**

There is an outstanding, online proposal-writing resource called "Writing Effective Grant Proposals" on the M.D. Anderson Scientific Publications office website. The link is

<http://inside.mdanderson.org/departments/scipub/writing-effective-grant-proposals.html>

### **Oral Defense of the Written Proposal**

The student will make a 35-45-minute oral presentation describing the proposed project, during which he/she can expect interruptions only for questions of clarification. The committee will then ask questions about the research plan, alternate strategies, significance and background relevant to the research proposal in order to evaluate the student's depth of knowledge on the subject. Following questions focused on the research proposal, more general questions that are intended to test the depth and breadth of the student's knowledge may be asked. The Ph.D. advisor is not present at the oral exam.

You should practice giving your oral presentation to other students and/or postdocs at least a week before your exam.

### **Specific areas you should be prepared to address at your oral defense**

- The existing body of knowledge on the subject of your proposal, including work done in different experimental systems relevant to the project.
- Details of the experimental techniques to be used for the proposed research.
- A clear statement of the central hypothesis of the proposal.
- Likely outcomes of the proposed experiments and their interpretation.
- Difficulties and limitations of the proposed procedures.

- Alternative approaches to achieve the specific aims.
- The significance of the project.
- Relevant details of any literature cited in the proposal.
- Future directions of the proposed research beyond the specific aims.

## Examination Results

At the end of the exam, the committee will discuss the student's performance and inform the student of the outcome in both the written and oral components. Unconditional Pass, Conditional Pass, Retake, and Fail are all possible outcomes for each exam.

The exam may seem intimidating, but keep in mind that advisory committees give their approval for students to take their exams based on their belief that the students are adequately prepared and will pass it. Conditional and Unconditional Passes are the most common outcomes. Conditions attached to a Conditional Pass usually involve rewriting part or all of the proposal, writing a literature report on an area of deficiency, or enrolling in a course specified by the committee that will benefit the student's education. A student receiving a grade of Retake is required to take the exam again.

According to GSBS policy, *"Failure of the [candidacy] examination means the Examining Committee has decided that the student does not have the potential to complete the Ph.D. program, and the ASC will recommend to the Dean that the student be dropped from the Ph.D. program. The committee has the option of allowing the student to continue towards a terminal M.S. degree, or recommending that the student not be allowed to continue in a degree program. Subsequent to dismissal, the student may reapply to GSBS whereupon the application will be considered in competition with other applications pending at the time."*

## GSBS Rubric for the Evaluation of Exam Performance

Your examining committee will provide you with a completed rubric for the evaluation of your candidacy exam. The instructions below are copied from the GSBS form: RUBRICS FOR EVALUATION OF CANDIDACY EXAM PERFORMANCE AND M.S./PH.D. DEFENSES. The evaluation rubrics [see next page] have been formulated and approved for use by the GSBS standing committees in an effort to assist students and faculty alike. The rubrics should be of assistance to students since they will provide guidelines as to what will be expected of students by faculty during their candidacy exams and defenses. The rubrics should be of assistance to faculty in that they will provide guidelines for assessing student performance during the candidacy exam and defense. They are by no means the only criteria by which students may be assessed, and they are not intended to specifically dictate to faculty how to assess student performance. The distribution and use of the rubrics will be as follows:

1. The rubrics for the Evaluation of Candidacy Exam performance should be provided to:
  - a. Ph.D. students and their Advisory Committee faculty when the Advisory Committee is approved by the GSBS Academic Standards Committee (ASC), and
  - b. to the student's Examination Committee when the ASC approves the student's Petition for Ph.D. candidacy.

After the Ph.D. Candidacy Exam, the completed rubrics should be submitted to the GSBS Office of Academic Affairs (OAA) when the Examination Committee submits the Results of Examination forms. The Examination Committee may elect to submit these as one per

Examination Committee member, or may elect to submit one form for the entire Examination Committee.

2. The rubrics for the Evaluation of M.S./Ph.D. defense performance should be provided to:
  - a. M.S. and Ph.D. students and their Supervisory Committee faculty when the Supervisory Committee is approved by the ASC.

After the defense, the completed rubrics should be submitted by the Supervisory Committee to the OAA when the Results of Defense are also submitted to the OAA.

Students and faculty alike should be assured that the design of the rubrics, i.e. using a Likert scale of assessment (strongly agree, agree, etc.), is primarily for internal GSBS usage during accreditation processes that require monitoring student outcomes using these types of methods. The final decisions regarding the candidacy exams and the defenses will still be decided by the faculty using methodologies currently in place. The rubrics are therefore intended to be advisory.

**EVALUATION OF CANDIDACY EXAM PERFORMANCE (A GSBS Form)**

Student Name: \_\_\_\_\_

Faculty Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Rubric</b>
				Demonstrated competency in knowledge in the quantitative core area.
				Demonstrated competency in knowledge in the molecular core area.
				Demonstrated competency in knowledge in the cellular core area.
				Demonstrated competency in knowledge in the systems core area.
				Demonstrated command of the general knowledge required of a biomedical scientist
				Had command of the literature in the field of study being examined.
				From the literature, was able to identify questions that need to be answered to advance his/her field
				Formulated a clear hypothesis concerning at least one of the questions from the literature.
				Formulated clear, focused specific aims that led to experiments to test the hypothesis.
				Understood the methods that would be needed to carry out the experiments in the proposal.
				Was able to display critical thinking, could design experiments in a rational way, and could identify the strengths and weaknesses of his / her experimental design.
				Was able to effectively communicate in writing and orally the design and possible interpretation of the proposed research.

				Was able to answer questions about the proposed research project in a professional manner.
				Was able to answer questions concerning anticipated experiments, potential pitfalls of the overall plan, and projected contingency plans to achieve the specific aims.

## **M.S. Bypass**

Once you successfully pass your candidacy exam, your examining committee may elect for you to bypass the M.S. degree. This means that you will proceed directly on to your postcandidacy Ph.D. studies without writing and defending an M.S. thesis. (see *the GSBS online document "Requirements for the Doctor of Philosophy Degree"* for more information).

## **GSBS Candidacy Forms**

The various GSBS forms required for the candidacy exam include the following. All are available on the GSBS website at <http://www.uthouston.edu/gsbs/current-students/academics/forms/index.htm>

- Petition for Ph.D. Candidacy Examination
- Template for Specific Aims Page for Candidacy Petition
- Ph.D. Examining Committee Form
- Candidacy Exam Results Report Form
- Code of Conduct and Pledge Form

## Program Events and Activities

### Section Topics

- Medical Physics Program Orientation
  - Medical Physics Program Administrative Session for Incoming Trainees
  - Student Luncheons
  - Lunch with Program Director and Deputy Director
  - Spring Student/Faculty Meeting & Mixer
  - Thesis Defense Talks
  - Department Seminar Series
  - Departments of Imaging Physics and Radiation Physics Alumni Luncheon
- 

### Medical Physics Program Orientation

The medical physics Programs hosts an orientation session on Tuesday from 3 – 5 p.m. during GSBS orientation week. Incoming trainees, current trainees, and faculty are invited to attend. Requirements for both the SMS and PhD degrees in Medical Physics are presented. At the end of the session a mixer is held, light refreshments are provided for an informal meet and greet.

### Medical Physics Program Administrative Session for Incoming Trainees

During the week of GSBS orientation, typically Wednesday, an administrative session is held for all incoming program trainees. The Executive Director for Education will present administrative procedures for time-off, keys, library access, dress code, travel policy and support. Students will also receive their radiation safety training in order to receive their radiation badge.

### Student Luncheons

The Medical Physics Program will budget each year for two student luncheons. It is at the discretion of the Student-Faculty Liaison when to hold these meetings. The purpose of 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 during lunch (provided) to bring students up-to-date on recent GSBS or program changes and to listen to issues or concerns from students.

### Spring Student/Faculty Meeting & Mixer

Each spring, the Medical Physics Program hosts a meeting for Medical Physics faculty and students. This annual event provides an opportunity for faculty and students to hold a formal meeting and then move to the mixer portion which allows for social mingling outside the laboratory environment.

## **Thesis Defense Talks**

All Medical Physics students are expected to attend the thesis/dissertation defense seminars for all Medical Physics students. This is a chance to support your colleagues and learn what is expected for a successful MS or PhD degree defense presentation.

## **Department Seminar Series**

The Departments of Imaging Physics and Radiation Physics host seminars from September – May. Internationally recognized scientists are invited to speak and present their latest results. All Medical Physics program trainees are very strongly encouraged to attend these seminars. There are times when Imaging Physics trainees will be required to attend. Trainees will be notified via email of required seminar attendance.

## **Departments of Imaging Physics and Radiation Physics Alumni Luncheon**

During the annual meeting of the American Association of Physicists in Medicine, the Departments of Imaging Physics and Radiation Physics host an alumni luncheon for all former and current program trainees, faculty and staff. The luncheon is typically held on Tuesday from 12:00 – 1:30 p.m. at the convention center or convention center hotel.

## Administrative Information

Georgeanne Moore, Executive Director for Educational Programs in the Department of Imaging Physics, located at The University of Texas M.D. Anderson Cancer Center, Room FCT14.5032, extension 3-2548, provides administrative support to medical physics graduate students who are first-year students, or subsequent-year students being supervised by UTMDACC faculty. The departmental office is responsible for maintaining student personnel files, issuing keys and ensuring students are in compliance with institutional policies and procedures. All forms mentioned in this document may be picked up from the program office. Support staff personnel will be assigned by your supervisor.

## Time Off Requests

- The Office of Trainee and Alumni Affairs has a leave policy that applies to all Graduate Research Assistants appointed with funding for at least 12 months. These students are eligible annually for:
  - 40 Hours (10 days) sick leave
  - 60 Hours (15 days) vacation to be taken anytime during the 12 months and requested at least one week in advance of the leave

**Students must complete a “Request for Time Off” form when requesting sick leave, vacation or administrative leave (e.g., funeral, jury duty, or military duty). Time off must be approved by the Program Director or your faculty supervisor and filed with the department office.** To complete the form go to <http://inside.mdanderson.org/human-resources/leave-time-off/personal-time-away/pto-program.html>. The form is located under *Process for using PTO*, Step Two, Request for Time-Off Form. Trainees will complete for educational time, not PTO.

**Paychecks** – Students are encouraged to sign up for direct deposit during orientation.

Pay periods are as follows:

- GSBS-Funded Students – 1<sup>st</sup> and 16<sup>th</sup> of each month, pick-up at the Graduate School if no direct deposit
- MDA-Funded Students – the 5<sup>th</sup> and 20<sup>th</sup> of each month.

## Badges/Keys/Passwords

The department office is responsible for issuance, collection and reporting lost or stolen:

- Radiation Safety Badges
- Keys to Offices
- Computer Access Codes

## Mail/Communications

- Students have assigned mail boxes located in their work areas. All phone messages, supervisor communications and mail are placed in these boxes or transmitted via e-mail. **Please check your email and mailboxes at least once daily!** Inform the Program Office of any changes to your home residence address and phone number, student room number and extension.

- Long Distance Calls/Faxes – Long distance calls require a long distance authorization code. Ask your supervisor for permission to use his/her authorization code and the supervisor’s administrative assistant will place the call for you.

## Travel Requests

In order to travel on official business related to your education or your project work (e.g., present at local or national meetings), an “ETO” must be completed at least two weeks in advance of the date of travel. The Executive Director for Educational Programs will assign a support staff member to work with you on the completion of all travel arrangements.

Please note:

- Travel Funding – You are responsible for negotiating with your supervisor how the trip is to be funded and for obtaining source of funds account numbers. If a student is presenting papers, posters, or works in progress at national meetings, funding from the Graduate School is available via an application process. Application for GSBS funding support is due upon receipt of a presentation acceptance letter.
- During and After Travel – Save all original receipts for airfare, meals, hotels, taxi fares, shuttles, etc. If you are splitting the cost of a room with another student, have the hotel provide each student with an original bill for their portion of the hotel charges. Within 3 days of return from the trip, provide the secretary with all receipts and assist her in completing a “Travel Reimbursement Form”.

## Office Supplies and Presentation Materials

The Program Office provides office supplies; the administrative staff member who supports office supplies is Gloria Mendoza (3-3393). If you use the last of an item, or plan to use a large quantity of a particular item(s), please advise Gloria. All supplies are stored in the FCT 14<sup>th</sup> floor Educational area.

Presentation Materials – MDACC has an in-house, on-line media presentation department. To utilize this service, you must obtain an account number from your supervisor for the work and provide the secretary with this number. If your presentation is related to a specific grant or project, the presentation costs should be charged to the grant or project.

Photocopies – A copy machine is located in the FCT 14<sup>th</sup> floor educational area for your use. For emergencies, a back-up copier can be found in the administrative area on FCT 14<sup>th</sup> floor.

## Laboratory Coats

The Program Office provides one lab coat per student. Students are responsible for the cleaning of the lab coat, which must be kept clean and neat.

## Library Information

The Department of Radiation Physics maintains a departmental library on the second floor B2.4502 “corridor”. The library is open weekdays from 8:00 am to 5:00 pm. All books should be checked in/out through the Program Coordinator for Education, Melvina Hackett.

The Department of Imaging Physics maintains a departmental library CPB5.3300 just outside of the Imaging Physics Conference Room. The library is open from 7 AM – 4 PM. All books and journals should be checked in-out through the Administrative Assistant, Lisa Watson.

## Student Computing Resources

All program students receive an IBM compatible computer and 19” monitor with access to the Internet and printers. Microsoft Office for Windows 2007 to include Word, Excel, PowerPoint and Access is the software supported by the institution.

All **treatment planning computer inquiries** should be addressed to Dr. Melos Civic, Assistant Professor, Radiation Physics Scientific Computing Resources at extension 3-2595

All **computer hardware inquiries** should be addressed to 4-info via email or by calling 4-4636.

All **software inquiries** should be addressed to Georgeanne Moore, Program Manager for Educational Programs for the Department of Imaging Physics.

The program has two laptops for student checkout. These computers can be checked out for committee meetings, presentations, and gathering data while working on research in clinic area for download to desktop computers. Please see Gloria Mendoza or Georgeanne Moore to check one out.

## Medical Physics Program Newsletters

The Medical Physics Program publishes an annual newsletter each summer. If you have any suggestions for this publication or would like to contribute to it, please contact the Executive Director for Educational Programs.

## AAPM Dues

The Medical Physics Program currently has a policy to pay annual dues for membership in the American Association of Physics in Medicine . In order to receive reimbursement, please provide the Executive Director for Education with proof of payment. A check request will be processed for reimbursement, which typically takes up to 21 days for processing.

## Resource Suggestions

If you have suggestions for any new resources to be included in this handbook, or to be posted on the Medical Physics website, please let the Program Director or the Executive Director of Education know. We welcome your suggestions!

### Medical Physics Student Funding Levels (September 2011)

GRA (Ph.D.)	\$26,000
GRA (S.M.S.)	\$15,000 (for those funded) 1 <sup>st</sup> yr only

#### Additional Benefits

- Premium Sharing (50%) (Ph.D. only)
- Tuition Reimbursements

# Medical Physics Program Trainee Policies

- Student Leave Policy
- Student Dress Code Policy
- Student Travel Policy

## Student Leave Policy

Medical Physics Program  
The University of Texas M.D. Anderson Cancer Center

### 1. Intent and Scope of Policy

The intent of this policy is to clarify how the Office of Student and Trainee Resources Policy for Leave applies to GSBS students in the Medical Physics Program. This policy applies to all such GSBS students who have an appointment at the University of Texas M.D. Anderson Cancer Center.

### 2. On-site Attendance Policy

All students in the Medical Physics Program are expected to be on campus at The University of Texas M.D. Anderson Cancer Center, Monday through Friday, at least four hours per 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 (1) observing procedures; (2) meeting with visitors; (3) discussions regarding the student's research. Also, the faculty expect their students to be regularly on-site and productive.

However, it is recognized that there are times when, due to equipment availability, students will be required to work during the nighttime or on weekends. Also, there may be times when working off-site (e.g., at home) may be advantageous (e.g., writing a thesis or paper).

Any exceptions to the Monday-Friday, 8:00-5:00 hours must be approved by the student's supervisor. The supervisor should notify Georgeanne Moore, Executive Director for Educational Programs, by e-mail of these exceptions.

### 3. Student Leave

Time away from the institution for purposes other than official travel (see Travel Requests under Administrative Information in the New Student Orientation packet, Medical Physics Program) is termed "Leave" and requires completion of the "Request for Time Off" form electronically.

- Vacation Leave

- (a) 15 days to be taken any time during the 12-month appointment period, which typically coincides with the academic year.
- (b) Vacation leave must be requested using an "Request for Time Off" form at least one week in advance of leave.
- (c) The request should be approved by signature. For first-year students, by the Program Director; for non-first-year students, by their supervisor.
- (d) Students can request to carry up to 20 hours of unused annual leave forward from one appointment year to another. Students must complete the *Request to Carry*

*Annual Leave* form that can be obtained from the Program Office and have their mentor sign. The completed form is then returned to the Program Office for processing.

- Holiday Leave  
Holidays are those days posted by the M.D. Anderson Cancer Center for the year. If the GSBS has classes on an MDACC holiday, then the GRA can take that day off later as a “holiday earned”, utilizing the same rules as for vacation. If the GSBS has a holiday that is not an MDACC holiday, then it is not considered a holiday; to be off that day requires it to be taken as a vacation day, or “holiday earned” day.
- Performance Leave  
All Medical Physics Program students will be awarded “performance” leave between the Christmas and New Year’s holidays. This leave is in recognition of extra hours spent in the off-hours for research and training. Performance leave is charged as administrative leave, cannot carry over if not used, and has no monetary value.
- Sick Leave  
Graduate Research Assistants earn 10 sick leave days a year. Unused sick leave cannot be carried over from year to year. When sick leave is used, a “Request for Time Off” form must be completed and submitted to the supervisor the day the trainee returns. Trainees must notify their mentor promptly of intent not to come to work due to illness. If trainee cannot reach their mentor, they can call the Executive Director of Education, Georgeanne Moore at 713-563-2548.
- Administrative Leave (all requests for time off must be documented using the “Request for Time Off” form).
  - (a) Bereavement Leave – Upon the death of a trainee’s spouse, child, step-child, parent, parent-in-law, grandparent, grandparent-in-law, step-grandchildren, brother, brother-in-law, sister, or sister-in-law, a trainee will be granted funeral leave without regular pay. Funeral leave may not exceed three days, and the Program Director or supervisor may request verification of the funeral.
  - (b) Jury/Witness Duty – If called for jury duty, or subpoenaed to serve as a witness in a case, a trainee will be given time off with pay for regular work schedule to perform this civic responsibility. Notify the Program Director or supervisor immediately upon receipt of the notice of such duty and provide them with a copy of the notice. Upon completion of the duty, provide the Program Director with a copy of the release notice. Time off will begin on the day the trainee is required to serve. A written record of the time must be given to supervisors. When a trainee appears as a voluntary witness, time off must be charged to vacation leave or LWOP (Leave Without Pay).
  - (c) Military Leave – Trainees will be granted a leave of absence with pay of no more than 15 workdays in any calendar year to comply as a member of the National Guard or armed forces reserves. During military leave, a trainee will not be removed from the payroll, nor will such leave affect vacation or sick leave. A written notice that such leave is requested is required.
  - (d) Other – Leave needed in order to present lectures, seminars, or to sit for board exams is given with pay at the discretion of the appropriate department chair.

Leave for preparatory courses for board exams, or job interviews is considered personal; and in these instances, a trainee should request either vacation leave or leave without pay.

## Student Dress Code

Medical Physics Program  
Graduate School of Biomedical Sciences

The University of Texas M.D. Anderson Cancer Center at Houston  
The University of Texas Health Science Center at Houston

### **Purpose**

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

Student dress is observed by others and is a reflection on 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 are expected to use good judgment when selecting the clothes 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., sport championships, Halloween, Go Texan Day, blood drive, seasonal attire, etc.).
- All work in patient care areas during treatment hours requires a lab coat to be worn.
- Denim jeans are permissible provided they are in good condition (clean and no holes or patches).
- The following are deemed unacceptable: (1) skirt/dress/shorts' lengths shorter than 3" above the knee, measure from center of 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).

#### 2. Shoes

- Footwear must provide a safe and secure footing, offer protection against potential hazards, be made of material that provides a quiet walking surface and must be appropriate to the uniform or style of clothing worn.
- When working in laboratories of 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 hair restrained by use of clips, surgical caps, etc.
- Extremely long hair, 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 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 must be worn by students when working in radiation areas.

<b>Departments of Imaging Physics &amp; Radiation Physics Travel Policy for Graduate Research Assistants in the GSBS Medical Physics Programs</b>	<i>Adopted 6/2000</i>	<i>Page 1 of 5</i>
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## **PURPOSE**

This policy statement provides guidance regarding and clarification of institutional and departmental travel policies for all Imaging Physics and Radiation Physics trainees. Antecedent policies are cited in the reference section of this document. The sole objective of trainee travel is to further the education of the trainee.

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## **POLICY STATEMENT**

The Department of Imaging Physics of The University of Texas M. D. Anderson Cancer Center will support with funding or educational leave only travel that meets the criteria stated in this policy. All trainees are expected to comply with the provisions of this policy and those underlying it unless exceptions have received the prior approval of the Deputy Chair for Education or the Chair of Imaging Physics.

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## **SCOPE**

This policy applies to granting of leave and the reimbursement of Imaging Physics Trainees for travel.

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## **STRATEGIC VISION**

Enhance the quality and outcomes of our educational programs by providing the travel resources necessary for trainees to participate in regional, national or international scientific and/or professional activities. The trainees should be prepared to take full advantage of this opportunity by focusing on both formal and informal opportunities to interact with faculty and peers from other institutions at all times during their travel. This includes attending structured components of the meeting (scientific sessions, etc.) and informal events (dinners, etc.) as suggested by their mentors.

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## **DEFINITIONS**

BTA – *Business Travel Authorization* the process by which the institution prepays certain travel expenses for an employee rather than reimbursing the employee after the fact.

Imaging and Radiation Physics Trainee (subsequently “trainee”) -- any employee within the Department of Imaging Physics of The University of Texas M. D. Anderson Cancer Center who has an appointment through the institutional Office of Trainee and Alumni Affairs, including undergraduate students, graduate students, research interns, post-doctoral research fellows and clinical residents

Designated Headquarters – The nominal location where a trainee works. In most cases this would be the location of his or her office or desk.

The Program – This refers to the Medical Physics Graduate Education Program of The University of Texas Graduate School of Biomedical Sciences, the Imaging Physics Residency Program of The University of Texas M. D. Anderson Cancer Center, or the Postdoctoral Fellowship Program of the Department of Imaging Physics, as appropriate. Each of the programs is administered by the Department of Imaging Physics of The University of Texas M. D. Anderson Cancer Center.

Travel – Permission to be absent from the institution for educational purposes and the process by which related, approved expenses are reimbursed falls under the administrative category of “travel.”

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## **PROCEDURE**

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### **General Guidelines for Imaging Physics Trainee Travel**

#### **1.0 Travel Approvals**

All absences from a trainee’s designated headquarters for travel on institutional business must be approved before the travel takes place. Trainees who are absent without proper approval are considered to be absent without leave and are subject to forfeiture of pay and discontinuance of benefits for the duration of the absence.

#### **2.0 Administrative Support for Travel**

Approval and administrative support for the travel for trainees will be the responsibility of the trainee’s Program Director and of the Executive Director for Education. Processing of travel requests and related reimbursement requests will be provided by the Program Directors’ support personnel. All business air travel must be booked through The University of Texas MD Anderson Cancer Center’s approved travel agents.

#### **3.0 Local Travel**

Attending in-city meetings that do not require an overnight stay are not considered Travel, per se. In these cases, the absence approval process in section 1.0 must still be followed, but the Travel Reimbursement form is not required. Parking and registration costs are reimbursable expenses for local conferences, but others, including taxi fares, car rental and meals will not be reimbursed. These disallowances are derived from State and Federal Regulations relating to point-of-service issues.

#### **4.0 Combined Business and Personal Travel**

Only business travel expenses are reimbursable, but M.D. Anderson recognizes that, on occasion, personnel may wish to combine required business travel with personal time.

The BTA cannot be used to book any personal airfare. If the travel includes a “personal leg,” then it must be booked and paid for separately. In addition, the State Rate may not be used for personal travel.

Families should not accompany trainees on official travel as family responsibilities can distract the trainee and detract from the educational benefit of the trainee’s attendance at the conference. Trainees may, with the permission of their Program Director, extend their absence with a family vacation either before or after a conference or other business travel.

## **5.0 Length of Stay**

Expenses incurred prior to the beginning, or after the conclusion, of official business are not reimbursable. The Program may allow, at the approver's discretion, one day prior and one day after the business scheduled for domestic travel and two days before and after for international travel. In these circumstances, hotel and meal expenses are reimbursable but not rental cars or other incidentals. In some circumstances, at the approver's discretion, extending the time away to include a Saturday night stay may be justified in order to reduce overall travel expenses.

## **6.0 Eligibility**

Trainees will receive leave and Program/departmental funding to attend one national meeting and/or one chapter meeting each academic year with the permission of the relevant Program Director. This is a privilege that is intended to enhance the education of the trainee. As such, it cannot be "banked" from year to year or transferred from one trainee to another.

## **7.0 Airfare**

Currently, there are two choices of airfares available:

- State Rate Airfare – Government fare, flexible, low airfares, MDACC preferred.
- Lowest Available – Restricted availability, Saturday night stay may be required, \$100 fee charge for changed, non-refundable tickets.

The department will book airline tickets at the cheaper fare, whether it be the state rate airfare or the lowest available, unless there is a possibility that the resident may need to make a change before or during the travel. Air transportation is to be "coach" class.

## **8.0 Personal Car**

If a trainee chooses to travel to a meeting by personal car, the reimbursement will be the lesser of (1) actual mileage based at the current state reimbursement rate, or (2) the average cost of round-trip airfare. The department discourages the use of personal automobiles unless it takes less time to drive than to fly or unless several people can travel together by automobile more economically than flying.

## **9.0 Registration**

Trainees must register for meetings via the ProCard to avoid out-of-pocket expense.

## **10.0 Hotel**

Hotel reimbursement for attending a meeting will be based on the State of Texas Office of Comptroller Guidelines for out-of-state lodging rates found at URL:

[https://fm.xcpa.state.tx.us/fm/travel/out\\_of\\_state/index.php](https://fm.xcpa.state.tx.us/fm/travel/out_of_state/index.php)

Trainees traveling are expected to share rooms. Trainees are responsible for booking their own rooms and providing the hotel information to the appropriate support personnel. Based on the cost of the hotel room and the State's out-of-state lodging allowance, the department will determine how many trainees must room together. Each trainee will be responsible for providing an original receipt in his/her name for his/her share of the hotel room upon return to the office. This should be discussed with the hotel at the time of check in and obtained when checking out as it is very difficult or impossible to obtain such receipts later.

### **11.0 Meal Allowance**

Before trainees travel to a meeting, they will be informed of the allowable maximum reimbursement amount per day for meals according to the State of Texas Office of the Comptroller Out-of-State Meal Allowance Chart found at:

[https://fm.xcpa.state.tx.us/fm/travel/out\\_of\\_state/index.php](https://fm.xcpa.state.tx.us/fm/travel/out_of_state/index.php)

Original itemized receipts will be required for any meal costing more than \$25. **Alcoholic beverages are not reimbursable as part of travel meal expenses as a matter of state law.**

### **12.0 Airport Parking**

Trainees will be reimbursed for parking their cars at the airport while on official business. Trainees are encouraged to car-pool to the airport and to use an economy lot when possible.

### **13.0 Non-Reimbursable Expenses (unless approved prior to travel by approver)**

- a. Video Rental
- b. Phone Calls
- c. Cabs (other than to and from the destination airport to the meeting hotel or location)
- d. Incidentals
- e. Rental Car
- f. Internet services

### **14.0 Traveler Reimbursements**

Reimbursement requests must be for actual expenses. If a daily limit is stated for reimbursement without receipts, that is not a “per diem” allowance but rather a convenience for the traveler. Travelers may not claim reimbursement in excess of their actual expenses and thus “make money” on official travel. The traveler will be required to swear an oath to this effect as part of the reimbursement request. Trainees are expected to turn in their report of expenses with all original receipts within three working days of their return to work after travel.

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## **REFERENCES**

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Trainees travel on funding from Fund Group 1

General Travel Guidelines: <http://inside.mdanderson.org/departments/accounts-payable/travel/general-guidelines.html>

Airfare: <http://inside.mdanderson.org/departments/accounts-payable/travel/airfare.html>

Airport Parking: <http://www.theparkingspot.com/Promotions/CorporateHome.aspx?CCode=MDAn1219>

Hotel/Lodging: <http://inside.mdanderson.org/departments/accounts-payable/travel/hotel-guidelines.html>

Meals: <http://inside.mdanderson.org/departments/accounts-payable/travel/meals.html>

Mileage: <http://inside.mdanderson.org/departments/accounts-payable/travel/mileage.html>

Taxi/Shuttle/Car Service: <http://inside.mdanderson.org/departments/accounts-payable/travel/taxi-services.html>

Rental Car: <http://inside.mdanderson.org/departments/accounts-payable/travel/car-rental.html>

Registration Fees:  
<http://inside.mdanderson.org/departments/accountspayable/travel/registration-fees.html>

## Commonly Used Forms

All forms listed below can be found at the <http://www.uthouston.edu/gsbs/current-students/academics/forms/index.htm>)

### Committee Forms

- [Advisory Committee](#)
- [Supervisory Committee](#)
- [Advisory/Supervisory Committee Meeting \(Report of\)](#)

### M.S./Ph.D. Forms

- [Petition to Candidacy for the M.S. Degree](#)
- [Results of the M.S. Defense](#)
- [Petition for the Ph.D. Candidacy Examination, Off-Topic](#)
- [Petition for the Ph.D. Candidacy Examination, On-Topic](#)
  
- [Results of the Ph.D. Written and Oral Candidacy Examination: On Topic](#)
- [Results of the Ph.D. Candidacy Examination: Off Topic](#)
- [Petition for the Defense of the M.S. Thesis or Ph.D. Dissertation](#)
- [Results of the Defense of the Ph.D. Dissertation](#)
- [Waiver of Admissions Prerequisites](#)
- [Evaluation of Candidacy Exam Performance](#)
- [Evaluation of M.S./Ph.D. Defenses](#)

### Academic Forms

- [Alternative Area Course \(Approval to Receive Area Credit for\)](#)
- [Area Course Requirement \(Request to Substitute\)](#)
- [Literature Survey \(Request for Approval of\)](#)
- [Special Project: Course \(Request for Approval of\)](#)
- [Special Project: Research \(Request for Approval of\)](#)

### Other Forms

- [Code of Conduct for GSBS Students](#)
- [Program Affiliation \(Notification of\)](#)
- [Student Travel Award \(Application for\)](#)

## Financial Support and Awards

Graduate School of Biomedical Sciences  
Medical Physics Students

It is the responsibility of the student to obtain funding, although the faculty will assist students in securing available funding. The following funding sources are available:

1. Graduate School Assistance – There are a variety of fellowships or graduate assistantships available for (M.S.)Ph.D. students through the graduate school; these are not available for specialized Masters students. However, students may be eligible through the Health Science Center Office of Student Financial Aid for funds under the following programs:
  - Federally Insured Student Loan Program
  - Hinson-Hazlewood College Student Loan Program
  - Minnie Stevens Piper Foundation Loan Program
  - National Direct Student Loan Program
  - State Merit Scholarship Fund
  - Tuition Scholarships for Needy Students
  - Houston Northwest Medical Center Hospital Auxiliary Emergency Loan Fund

These loan and scholarship funds may be available based on demonstrated financial need and/or academic excellence. Application forms and complete information may be obtained from:

Office of Student Financial Aid  
The University of Texas  
Health Science Center at Houston  
Post Office Box 20036  
Houston TX 77225  
(713) 792-4655

2. Department of Imaging Physics
  - (a) Robert J. Shalek Premasters Fellowships (3): First-year M.S. in Medical Physics students are eligible. Students are selected based on merit.
  - (b) Robert J. Shalek Predoctoral Fellowship in Radiation Physics (1): An (M.S.)Ph.D. student having completed his/her first two semesters of study with a grade point average of 3.2 or better. The student should be supervised by a member of the Medical Physics faculty. The student is selected based on merit and is employed as a Graduate Research Assistant at 50% time, at funding levels consistent with GSBS stipends. The term of this fellowship is one year; and it is viewed as bridge funding for promising research projects. Applications are available in the office of the Department of Imaging Physics' Executive Director of Education (B3.4329).
3. Research Funds – The majority of our students are supported by grant or contract funds provided by their supervisors during the research phase of their projects. These funds are usually not available until after the year for SMS trainees and second year for PhD

trainees, at which time the student has identified a supervising committee. Graduate Research Assistant at 50% time, at funding levels consistent with GSBS stipends.

#### 4. Outside Fellowships

- (a) GSBS Merit Fellowships – Each year two or three Merit Fellowships are awarded to the top applicants (as identified by the Admissions Committee of the Graduate Faculty) to recognize their outstanding achievement and scholarly potential. The Merit Fellowship consists of up to \$3,000 per year (renewable for up to four years), in addition to the student's Graduate Assistantship.
- (b) American Association of Physicists in Medicine Fellowship for Graduate Study in Medical Physics – Awarded for first two years of graduate study leading to a doctoral degree. A stipend of \$18,000 per year is assigned to the recipient.
- (c) Presidential Fellowships for Advanced Students – The Presidents of the University of Texas – Houston and the M.D. Anderson Cancer Center have provided funding for two kinds of awards for GSBS students:
  - Presidents' Merit Scholarship – Awards of \$3,000 are made to outstanding applicants as a supplement to the standard GSBS Assistantship of \$26,000. The scholarship will be continued for four years, provided the recipient's academic performance is satisfactory. Nominations for the award are made by the GSBS Admissions Committee and are based upon the applicant's academic and research achievements and scholarly potential. The Dean of the Graduate School awards the scholarship in the offer of admission to the applicant.
  - Presidents' Research Scholarship – One-year scholarships in the amount of \$5,000 are awarded to outstanding students who have successfully stood for candidacy and who have achieved distinction in research. Nominations for the scholarship can be made by any member of the Faculty. The applications are reviewed by a committee consisting of five past, present and future presidents of the Graduate Faculty.
- (d) Rosalie B. Hite Fellowship – Fellowships are open to promising graduate students or research workers in the area of cancer research, including the basic supporting sciences. Selection of Fellows by the Hite Fellowship Committee is on the basis of academic excellence of the candidate and the applicability of the proposed program to problems of cancer research. Fellowships shall be used only for the education and research training of the recipient. To be eligible, the student must be granted admission to The University of Texas Health Science Center Graduate School of Biomedical Sciences at Houston. Graduate work is to be done under the supervision of a faculty member of a component of UT at Houston, affiliated with the GSBS degree-granting program. The area of study is to be a field related to cancer. The application should be prepared in consultation with the faculty advisor, but it must be prepared by the Fellowship Applicant and not by the faculty sponsor. Fellowships are renewable annually, at the discretion of the Committee, until completion of the doctorate degree, but not beyond three years. This award includes a stipend of \$25,200 per year, tuition and fees and a single travel allowance of up to \$850 for the student to present his/her research at a national meeting.

- (e) American Legion Auxiliary Fellowship – Student must be in good standing in the (M.S.)Ph.D. degree program. Research must be done under the supervision of a faculty member from the M.D. Anderson Cancer Center; area of study must be directly related to the field of cancer. Students must be U.S. citizens. Fellowships are renewable annually, upon the recommendation of the Student Affairs Committee, until completion of the doctorate degree, but not beyond three years. Fellowships will be in the amount of approximately \$5,000 per year.
- (f) Association for Women in Science (AWIS) – Gulf Coast – Houston – To be eligible, the student must be currently enrolled in a Masters- or Doctoral-level program in any of the life, physical or social sciences. The institution must be within the geographical area of the Gulf Coast Chapter of AWIS. Lastly, the student must be a U.S. citizen. Scholarships of up to \$500 will be awarded. The scholarship may be used for any aspect of education, including tuition, books, equipment, housing, etc.
- (g) Sowell-Huggins Scholarships – The Sowell and Huggins families established an endowment in the GSBS in appreciation for the particularly effective treatment received by their sons, Andy Sowell and Wade Huggins, at the M.D. Anderson Cancer Center. The endowment is used to award \$3,000 scholarships to GSBS students who are involved in cancer research.
- (h) Sowell-Huggins Professorship and Graduate Fellowship – The Andrew Sowell-Wade Huggins Endowed Professorship and Graduate Fellowship in Cancer Research were presented for the first time in 2001. This joint award goes to a professor/graduate student team working in any area of cancer research who displays distinguished experience, exemplary work and excellence in research. The selected professor and graduate student receive funding of a year's stipend and are named the Sowell-Huggins Professor and the Sowell-Huggins Fellow.
- (i) Schissler Foundation M.D. Anderson Cancer Center Fellowship – This full Fellowship with benefits is awarded to a GSBS Ph.D. or M.D./Ph.D. student whose research is being conducted at M. D. Anderson Cancer Center. Student must have recently (within the last academic year) advanced to Ph.D. candidacy or be advanced to candidacy within one semester. Students must be conducting research that is directed towards a cure for some type of cancer. Recipients of this fellowship are asked to acknowledge this award on publications resulting from work done, all or in part, during the year of the award.

## 5. Graduate Student Awards

- (a) Aaron Blanchard Award – This award recognizes a Medical Physics graduate (M.S. or Ph.D.) for completion of an outstanding thesis or dissertation, which is judged to make a significant contribution to cancer therapy or diagnosis. This award consists of a certificate and a cash award. It is presented at the Graduate School of Biomedical Sciences Commencement in the spring of each year.
- (b) R.W. Butcher Achievement Award – An award in honor of Dr. R.W. Butcher, Dean Emeritus of GSBS, has been established to recognize one graduate student each year for excellence in research and for contributions to the Graduate School and to society as a whole. The award will consist of a \$2,000 prize to be given during the fall semester and recognition at the GSBS Commencement Ceremony in May. The GSBS

Student Affairs Committee will review the applications and make recommendations to Dr. Butcher, who will select the awardee.

- (c) Sam Taub and Beatrice Burton Endowed Fellowship – In 2004, this \$2,000 award was established by Mary Wright and her sister, Joanna Ross, in honor of their grandfather and great aunt to support students with research in the area of sight-related vision problems and the genetics and potential therapies behind these life-altering health concerns.
- (d) ACMP Student Achievement Award – Each year one Medical Physics graduate student is awarded a \$1,000 scholarship at the Annual American College of Medical Physics (ACMP) Meeting. Program Directors of accredited medical physics programs may nominate students from their program to receive this award. Nominations are reviewed by the ACMP Awards & Honors Committee, with final recommendations submitted to the ACMP Board of Chancellors for approval.
- (e) AAPM – Young Investigators Competition – Young Investigators are current graduate students, post doctoral fellows, or residents in a Medical Physics Program, or someone who has completed such a program in the past eighteen months. Presentations are judged using the following criteria: (1) Innovative scientific work; (2) Scientific content of presentation; (3) Organization of material; (4) Effectiveness of presentation; (5) Use of audio-visual aids; and (6) Use of time. The First Place Award is called the “John R. Cameron Award” and includes a cash award and a plaque. The second and third place winners also receive cash awards and plaques.
- (f) SWAAPM – Young Investigators Competition Awards – Young Investigators are current graduate students, post doctoral fellows, or residents in a Medical Physics Program, or someone who has completed such a program in the past eighteen months. These cash awards recognize the best presentations at the Young Investigators Symposium at the fall and spring meetings of the Southwest Regional Chapter of the AAPM.
- (g) Heavy Particle Therapy Research Travel Award - It is the intention of the donor that the student selected to receive the award submit a presentation to the Young Investigator's Symposium at the AAPM meeting and have it accepted. The subject matter of the presentation should concern the treatment (dosimetry, planning, delivery system, response models, etc.) of patients with a particle heavier than an electron. If more than one student has a presentation accepted for the Young Investigator's Symposium, then the student that wins the symposium competition should receive the award. If none of the students win the competition, faculty of the Medical Physics program should vote to determine the awardee. If no student has a presentation accepted for the AAPM Young Investigator's Symposium, then no award will be made that year and the money will be reinvested in the principal of the endowment.

## M. D. Anderson & UTHSC-H Resources

### Section Topics

- M. D. Anderson Research Weekly
  - M. D. Anderson Department of Scientific Publications
  - M. D. Anderson Research Medical Library
  - M. D. Anderson Medical Graphics & Photography
  - M. D. Anderson Trainee and Alumni Affairs
  - M. D. Anderson Ombuds Office
  - M. D. Anderson Employee Assistance Program
  - M. D. Anderson Free English Classes
  - UTHSC-H Counseling Services
  - UT Police Department
  - Parking, METRO and Shuttles
- 

### M. D. Anderson Research Weekly

Research Weekly is a week-at-glance listing of scientific events at M. D. Anderson. 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](mailto:researchweekly@mdanderson.org) and ask to be added to their mailing list.

### M. D. Anderson Department of Scientific Publications

**Hours:** Monday – Friday 8:00 a.m. to 5:00 p.m.

**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 M.D. Anderson Cancer Center community, free of charge. Their main role is to assist M. D. 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, word usage, grammar, and style.

They have also written and published two valuable writing guides on their website: **“Writing Effective Scientific Articles”** and **“Writing Effective Grant Proposals.”**

### M. D. Anderson Research Medical Library

#### Hours

Monday – Friday: 7:30 a.m. to 7:00 p.m.

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/>

### **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.

### **Registering for Remote Access and Library Privileges**

The Research Medical Library is a member of the Texas Health Science Libraries Consortium (THSLC) that includes the major University of Texas component libraries in the Medical Center and 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. Registration is also required before using other Research Medical Library services, such as starting a printing & photocopy service account or requesting a copy of an article through document delivery (ILLiad). To register for library privileges, go to the Research Medical Library's Information Desk with your M. D. Anderson badge. You can also register via fax. If you wish to do this, call the Information Desk (713-792-2282) for assistance. All M. D. Anderson employees can apply for remote access to the Library's resources (online journals, books, and databases) by calling 4-INFO (713-794-4636). 4-INFO will provide a form that must be endorsed by your supervisor or department head and returned to 4-INFO before you will receive a user name and password.

### **Library Classes**

The library offers free classes throughout the year, which include, EndNote, PubMed, Finding Journals Online, Cited Reference Searching, RSS for New Publications, and SCOPUS. Check the library website for current class offerings. For registration information, visit: <http://www.mdanderson.org/library/>

## M. D. Anderson Medical Graphics & Photography

### Hours and Phone

Monday – Friday 8:00 a.m. to 5:00 p.m.  
Client Service: (713) 792-6734 (*Yellow Zone*)

**Location:** Yellow Zone, Room Y2.5724

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

**Education Hub:** <http://inside.mdanderson.org/departments/medical-graphics/mg-p-education-hub.html>

### About Medical Graphics

Medical Graphics & Photography provides professional graphic design, computer graphics, illustration, custom and stock photography, large format printing and lamination services. All services are provided on a fee-basis. On their website you will also find institutional logos, poster templates, graphics tutorials, graphics standards, and a stock photography library.

### Online Scientific Poster Tip Sheets

Tip Sheets: <http://inside.mdanderson.org/departments/medical-graphics/tip-sheets.html>

- Microsoft PowerPoint Template Tip Sheet
- Adobe Illustrator Template Tip Sheet
- Adobe Illustrator Tools & Palettes Tip Sheet
- Basic Guidelines & Costs for Client-Made Scientific Roll-up Posters
- Working with Type
- Steps in Developing and Refining Your Copy
- Deciding What Graphics to Use
- Poster Content Checklist

### Online Templates

- Scientific Poster Templates for PowerPoint and Illustrator  
<http://inside3.mdanderson.org/faculty/medgraphics/template.htm>
- On-Screen M. D. Anderson Title Slides (PowerPoint template)  
  
<http://inside.mdanderson.org/departments/medical-graphics/m-d-anderson-powerpointpresentation-templates.html>
- M. D. Anderson Memo, Letterhead, Fax  
<http://inside.mdanderson.org/departments/medicalgraphics/memoletterhead.html>

### Onscreen Tutorials

<http://inside3.mdanderson.org/faculty/medgraphics/educationhub.htm>

- How to Download M. D. Anderson Logo
- Using the Crop Tool in Photoshop
- Basic Techniques for Preparing Images for Publication Seminar

## **M. D. Anderson Trainee and Alumni Affairs Office**

**Phone:** (713) 792-2696

**Location:** Pickens Academic Tower, FCT 7.500, 1400 Herman Pressler Dr.

**Website:** <http://www.mdanderson.org/education-and-research/education-and-training/trainee-and-alumni-affairs/index.html>

The M. D. Anderson Trainee and Alumni Affairs Office provides services to support the needs of M. D. Anderson graduate students. Their services include, but are not limited to:

- Trainee appointments.
- Visa support/liaison with Office of International Affairs.
- Verification of employment and training for loan deferments and tuition reimbursements for research trainees.
- Publication of an online “Trainee Survival” guide with detailed information about Houston for newcomers.
- Institutional and benefits orientation.
- Career development workshops.

## **M. D. Anderson Ombuds Office**

**Phone:** (713) 792-4896

**Location:** Pickens Academic Tower (FCT10.5081), 1400 Hermann 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 M. D. Anderson Ombuds Office provides a confidential, impartial, independent and informal process to facilitate fair and equitable resolutions to workplace concerns that arise at the M. D. 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 M. D. 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.

## **M. D. Anderson Employee Assistance Program (EAP)**

**Phone:** (713) 745-6901

**Hours:** 8:00 a.m. to 5:00 p.m.

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

**Website:** <http://www.mdanderson.org/about-us/for-employees/employee-resources/employee-health-and-well-being/programs-and-services/employee-health-well-being-programs-services-employee-assistance-program-eap-.html>

### **About the EAP Program** *(edited from the EAP web page 6/15/09)*

*The Employee Assistance Program (EAP) at M. D. Anderson provides confidential assistance to all employees, faculty, designated trainees and students and retirees to help resolve problems that affect their personal lives and performance on the job. Immediate family members of employees also are eligible for these services. Everyone, on occasion, is challenged by personal problems and concerns. These may include family or relationship issues, work-related stresses, issues about alcohol or drug use, situations when legal help is needed, financial pressures, the loss of a loved one or health concerns such as depression or anxiety.*

Program Services Are Provided at No Cost and Include:

- Confidential assessment, short-term consultation and referral services for a variety of personal and work-related stressors.
- Personal legal assistance. A legal helpline is staffed by contracted attorneys who provide consultation at no cost to the employee for a wide variety of personal legal matters.
- Critical incident stress debriefing. Assistance is available to a work group affected by the death of a coworker or other traumatic event.
- Management consultation and training.
- Employee training.

### **Confidentiality** *(from the EAP web page 6/15/09)*

*“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.”*

## **Free English Classes at M. D. Anderson**

M. D. Anderson offers free English As A Second Language (ESL) classes for trainees, faculty and staff four times each year. The classes include: Speaking Naturally, Pronunciation, Grammar, Effective Presentation and Meeting Skills, Effective Communication in the Workplace and Writing. The classes are taught at M. D. Anderson by University of Houston instructors. They are three hours per week for 10 weeks. You

must register in person at M. D. Anderson for coaching and evaluation. Classes start about two weeks after the registration period. For more information, contact Mercedes Suraty-Clarke at: msclarke@uh.edu or go to: <http://inside.mdanderson.org/human-resources/employee-development/trainingprograms/es-class-11-08.pdf>

## UT Counseling and WorkLife Services

**Phone:** (713) 500-3327 or 800-346-3549

**Hours:** Services are offered all day, all week, all year (24/7)

**Counseling Website:** <http://publicaffairs.uth.tmc.edu/worklife/counseling/services.html>

**WorkLife Website (main):** <http://publicaffairs.uth.tmc.edu/worklife/index.html>

UT Counseling & WorkLife Services provides counseling, legal, financial, wellness, and other services for GSBS students and their immediate families. Their services are strictly confidential (see their confidentiality statement on their website), and are free and available to all benefits eligible faculty, staff, students, residents and fellows and their immediate families.

Free psychiatric consultations and on-going care are available upon request and need. The professional and support staff at UT Counseling and WorkLife Services look forward to working you and your immediate family as they continue building responsive and caring programs that recognize the unique and challenging issues faced by students.

Please visit their website to learn more about their services. To schedule an appointment, call (713) 500-3327.

## 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 M. D. 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 M. D. Anderson websites.

**GSBS:** <http://gsbs.uth.tmc.edu/policies/parking.html>

**UTHSC – Auxiliary Enterprises:** <http://ae.uth.tmc.edu/parking/index.html>

**M. D. Anderson:**

<http://inside.mdanderson.org/departments/campusops/parkingtransportation/html>

### **After Hours Student Parking - \$25.00 Per Semester**

After hours student parking is available for \$25.00 per semester in the Mental Sciences Institute Parking Lots, BB and CC on M. D. Anderson Blvd. This is a street level lot next to parking garage #10, across the street from the yellow zone. Please note that you cannot park your car in these lots for more than 24 hours or it will be subject to towing.

**Parking is available from 6:00 PM to 6:00 AM Monday-Friday, and all day on weekends and major holidays.** Purchase a static cling sticker tag in Suite 1.070q on the street level of the University Center Tower Lot, 7000 Fannin and Herman Pressler (by the security guard desk). You must have a UT student ID to purchase a tag. For more information, go to the Auxiliary Services website:

[http://ae.uth.tmc.edu/parking/student\\_parking.htm](http://ae.uth.tmc.edu/parking/student_parking.htm)

or call 713-500-3405

### **After Hours Parking in the Commons Waterfall Garage #15**

After hours, reduced-cost parking is available for M. D. 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.

### **METRO Light Rail and Bus Information**

METRO is Houston’s bus and light rail service. The regular one-way fare for METRO Rail or local METRO bus service is \$1.25. The student discount rate is \$.60 per local ride for both. This rate 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 and tracks your progress toward earning five free trips for every 50 paid rides. You can purchase a “Q” card online or at a number of different retail locations.

For more information about METRO and where to purchase a Q Card, go to [www.ridemetro.org](http://www.ridemetro.org) or phone (713) 635-4000.

### **UTHSC-H Shuttle Service**

Free shuttle service for students between UT housing and the 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://ae.uth.tmc.edu/parking/ae\\_sschedule.htm](http://ae.uth.tmc.edu/parking/ae_sschedule.htm)

Use Twitter for late-breaking UTHSC shuttle news at: <http://twitter.com/UTHSCShuttle>

# Changing Advisors & Leaves of Absence

## Section Topics

- Changing Advisors
  - Taking a Leave of Absence
- 

## Changing Advisors

From the “Policies & Procedures/Faculty Advisors” section of the GSBS website (6/15/09): *A student may select a new Advisor with the approval of the ASC. To request a change the student should submit a letter to the ASC describing the circumstances for the requested change. The current and prospective Advisors must submit letters to the ASC certifying that the student has discussed the proposed change with them, that they have both had the opportunity to review the student’s academic record, that they have discussed the proposed change with each other, and providing any other comments they wish to make. The prospective Advisor also should indicate his/her willingness to provide academic guidance and financial support for the student. Students who change Advisors are still expected to meet the stated deadlines for completion of degree requirements. If an extension is desired, a written request, including justification for the extension and an estimated date for completion of the requirement in question, must be submitted to the ASC for approval.”*

## Taking a Leave of Absence

From the “FAQs” section of the GSBS website (6/15/09):

### ***May I Take a Leave of Absence?***

*“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, but 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 may return prior to the date that they stated they would return. Students returning from LOA do not need to re-enter the Admissions process, but they must notify the OAA that they are returning just prior to the semester that they wish to re-enroll in. Extensions of the official LOA for up to one additional year may be requested through the OAA, and must have the approval of the Dean of the Graduate School. An official leave of absence request petition must be filled out by the student and turned into the OAA. As a part of this form, numerous signatures are required from various offices around the TMC, indicating that the student is permitted to initiate a leave of absence with non-registered status.”*

# Thesis/Dissertation Defense

## Section Topics

- Planning Your Defense
  - Formatted Dissertation for Supervisory Committee
  - Reserving a Room
  - Defense Announcements
  - Defense Refreshments
- 

## Planning Your Defense

From “For Graduating Students/Steps To Graduation” on the GSBS website (6/15/09):

1. *Write your Thesis/Dissertation*
2. *Submit the “Request for Defense of the M.S. Thesis or Request for Defense of the Ph.D. Dissertation” form to the Office of Academic Affairs (GSBS, BSRB 3.8451)*
  - *turned in at least 10 working days before defense*
  - *include a one-page abstract - electronic submission is encouraged*
3. *Defend your Thesis/Dissertation; submit signed Results of Defense. Defenses must occur no later than two weeks prior to the end of a term.*
4. *Submit Your Thesis/Dissertation to the Office of Academic Affairs*
  - *original Thesis/Dissertation, approved by your Supervisory Committee*
  - *only **one unbound** Thesis/Dissertation is required*
  - *on good quality white paper such as copier paper*
  - *black specks from copier machines should not be evident!*
5. *Submit one copy for every member of your supervisory committee, two for yourself and one for the library to the Program Office. Copies should be printed on 24lb paper, which can be obtained from the Program Office.*
6. *SUBMIT EXIT FORMS (Exit Forms can be picked up at GSBS, BSRB 3.8451.) Ph.D. Forms:*
  - *Alumni Form; Survey of Earned Doctorates; Microfilming Agreement; Application for Degree;*
  - *Exit Clearance Form*
  - *submit cashier’s check or money order (no personal checks or cash) in the amount of \$65 made out to “Proquest Information and Learning” to pay for microfilming your dissertation*

For detailed information about submitting your dissertation, defense guidelines and exit requirements, go to these these GSBS web pages:

<http://gsbs.uth.tmc.edu/policies/msreqs.html>

<http://gsbs.uth.tmc.edu/policies/phdreqs.html>

<http://gsbs.uth.tmc.edu/gradguide/thesis.html>

## Formatted Dissertation for Supervisory Committee

When you submit your dissertation to your Supervisory Committee prior to your defense, it should be in its final formatted form per GSBS guidelines. This includes correct grammar, word usage, spelling and final figures.

## **Reserving a Room**

You are responsible for scheduling the room for your defense. You should reserve your room for 3.0 hours with 0.5 hours for set up and 2.5 hours for your seminar and committee meeting that will follow. Please have your mentor's support personnel reserve the room. Room should be large enough to accommodate up to 50 people, have AV equipment (podium with microphone, computer, LCD projector, laser pointer and white board or flip chart).

## **Dissertation Defense Announcements**

The Program Office prepares and sends a defense announcement via email invitation to all Medical Physics Program faculty and students. In order to prepare these announcements, students should provide the Program Office with the date and time, room number, and seminar title as soon as it is known. GSBS also sends out email announcements to all GSBS faculty and students for all M.S. and Ph.D. defenses.

# Leaving M. D. Anderson

## Section Topics

- Checking-out of your Department and/or M. D. Anderson
  - Checking-out with the Medical Physics Program Office
- 

### **Checking-out of your Department and/or M. D. Anderson**

When you are ready to leave your department, check with the Program Office to find out what you need to do. Trainee check out takes place no earlier than two weeks and at least within five days prior to the trainee's end date. Trainee must notify the Program Office at 3-2548 as soon as possible of their working day at UTMDACC. Trainees must report to the Trainee & Alumni Affairs (TAA) office to begin the check out process, Pickens Academic Tower, FCT 7.500. No appointment is necessary. All trainees receive a clearance form to be completed and signed by the departments listed on the form, e.g. medical library, payroll, etc. The check out process is complete once a trainee has been cleared by all departments 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-outprocedure.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. The Program Office will be the last person to sign on 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.