UNIVERSITY OF TORONTO
DEPARTMENT OF RADIATION ONCOLOGY

PHYSICS RESIDENCY PROGRAM
POLICY HANDBOOK
August 31, 2007

The Program Academic Rules and Regulations were accurate at the time of publishing. The Program reserves the right to change these policies, and will formally notify students of any and all changes. Effective March 10 2007.

UNIVERSITY OF TORONTO
DEPARTMENT OF RADIATION ONCOLOGY

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PHYSICS RESIDENCY PROGRAM
POLICY HANDBOOK

Program Goal and Objectives

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Glossary

UTDRO	University of Toronto Department of Radiation Oncology
PMH	Princess Margaret Hospital
TSRCC	Toronto Sunnybrook Regional Cancer Centre
PRPC	Physics Residency Program Committee

UNIVERSITY OF TORONTO
DEPARTMENT OF RADIATION ONCOLOGY
ACADEMIC PROGRAMS

PHYSICS RESIDENCY PROGRAM

GOAL AND OBJECTIVES

GOAL

The overall goal of the UTDRO Physics Residency Program is to produce highly qualified and competent health professionals who combine a comprehensive understanding of clinical radiation physics and specific knowledge of radiation therapy and radiation oncology principles and practice with enhanced leadership, research and teaching skills .The program will meet and exceed CAMPEP requirements for program quality. The residents will have a relevant, comprehensive and satisfying educational experience.

OBJECTIVES

The objectives of the residency in Radiation oncology physics are:

1. *To prepare each resident for a future career as a Radiation Oncology Physicist.*

   During the program, the residents will become competent in all of the radiation oncology physics activities undertaken in an academic cancer centre.

2. *To provide residents with fundamental knowledge of the disciplines of radiation oncology and radiation therapy.*

   Residents will work closely with radiation oncologists and radiation therapists to understand the role and practice of radiation oncology and radiation therapy in cancer management.

3. *To prepare residents to recognize, understand and address scientific and technical problems relevant to the practice of radiation oncology physics.*

   Residents will be expected to complete one major and at least one minor clinically relevant project during their program.

UTDRO PHYSICS RESIDENCY PROGRAM

PHYSICS RESIDENCY PROGRAM COMMITTEE	**POLICY NUMBER: 1.1**
Revision Date: June 12, 2006	**Section 1: Structure and Governance**

1. The Residency program is governed by the Program Director and the Physics Residency Program Committee.

2. The PRPC is chaired by the Program Director (see Policy 1.2) and includes one physics resident, one Radiation Oncologist, one radiation therapist (with faculty appointment) and the local site coordinators from Toronto Sunnybrook Regional Cancer Centre and Princess Margaret Hospital.

3. Terms of Reference are located in ***Appendix A: Physics Residency Program Committee – Terms of Reference***.

UTDRO PHYSICS RESIDENCY PROGRAM

PROGRAM DIRECTOR	POLICY NUMBER: 1.2
Revision Date: June 12, 2006	Section 1: Structure and Governance

1. The Program Director is appointed by the Executive Committee of the UTDRO from among the physics faculty in the UTDRO.

2. The Chair of Education in the UTDRO recommends a new or replacement Program Director to the Executive Committee of the UTDRO.

3. For purposes of the Physics Residency Program , the Program Director reports to the Vice –Chair, Academic programs, UTDRO.

4. The Program Director should meet the following criteria:

    - Must be a Chief Physicist or Senior Medical Physicist.

    - Must be a full time staff member of the radiation oncology (or radiation medicine) program and be involved in the practice of radiation oncology physics.

    - Must contribute sufficient time to administer the training program and ensure adherence to guidelines and appropriate quality control of the program from beginning to end.

    - Must be responsible administratively for the total training in radiation oncology physics, which includes the participation, instruction and supervision of physics residents.

    - Must arrange for the provision of adequate facilities, teaching staff, clinical resources and educational resources.

    - Is responsible for administering the selection process for the medical physics residents and must ensure that the guidelines regarding the selection process are followed.

    - Must ensure that the proper evaluation procedures are followed during the training program.

UTDRO PHYSICS RESIDENCY PROGRAM

PROGRAM FACULTY	**POLICY NUMBER: 1.3**
Revision Date: June 12, 2006	**Section 1: Structure and Governance**

1. Faculty from the UTDRO and staff physicists from both TSRCC and PMH are involved in the Residency Program as local site coordinators, course supervisors, lecturers, rotation supervisors and advisors. All staff physicists at TSRCC and PMH may participate, to some extent, in the program.

2. **Faculty are** selected based upon their clinical experience and expertise, teaching and supervisory ability and the quality and relevance of their research program.

3. There will be one **local site coordinator** at the TSRCC and one at the PMH. The local site coordinator is responsible for overall management of the residency program at that site.

4. Each resident will have one **advisor** who is a certified staff physicist, and who will supervise the resident throughout the program. The advisor will meet on a regular basis with the resident and guide him/her through the program.

5. Each resident will have one **research supervisor** for his/her clinical research project. That supervisor can be the advisor.

6. Each didactic course will have one **course supervisor**. That supervisor may utilize other faculty as lecturers.

7. Each clinical rotation will have one **rotation supervisor**. That supervisor will have expertise in the material covered by the rotation.

8. For each project, other than the clinical research project, the resident works with a staff physicist.

UTDRO PHYSICS RESIDENCY PROGRAM

RELATIONSHIP TO OTHER PROGRAMS	POLICY NUMBER: 1.4
Revision Date: June 12, 2006	Section 1: Structure and Governance

1. The Physics Residency Program is a program in the UTDRO, in the faculty of Medicine of the University of Toronto.

2. The Program is operated within the Radiation Programs at both the TSRCC and PMH. At each centre, the Department of Medical Physics (Radiation Physics at PMH), together with the Departments of Radiation Oncology and Radiation Therapy constitute the Radiation Treatment Program (Radiation Medicine Program at PMH).

3. Numerous staff of the Radiation Treatment Program are appointed to the Research Institutes at TSRCC and PMH.

4. Members of the medical physics and radiation oncology groups are also members of the Department of Radiation Oncology, the Department of Medical Biophysics at the University of Toronto and many other university departments and hospital research institutes.

5. The Departments of Radiation oncology physics encompasses not only the staff physicists but also electronics, mechanical and information technology professionals, physics technologists and residents.

6. The Radiation Oncology Residency Program received accreditation from the Royal College of Physicians and Surgeons of Canada in 2003. Radiation Oncology Physics and Radiation Oncology Residents participate jointly in weekly treatment planning sessions.

7. The Department of Radiation Oncology offers a training program in medical radiation technology through The Michener Institute for Applied Health Sciences and the University of Toronto. Many of these students in radiation therapy stream have their clinical rotations at either TSRCC or PMH. Staff medical physicists and radiation oncologists are also lecturers in this program.

UTDRO PHYSICS RESIDENCY PROGRAM

PROGRAM RESOURCES	**POLICY NUMBER: 1.5**
Revision Date: June 12, 2006	**Section 1: Structure and Governance**

1. The Physics Residency Program receives support from UTDRO, TSRCC and PMH.
2. The two clinical sites for the program are the TSRCC and PMH.
3. Administrative and educational resources for this program are provided by the UTDRO.
4. Operational resources for the program are supplied by the clinical sites.
5. Salary support for residents is supplied through the operating budgets of the clinical sites.

UTDRO PHYSICS RESIDENCY PROGRAM

ENROLMENT AND RECRUITMENT	**POLICY NUMBER: 2.1**
Revision date: June 12, 2006	**Section 2: Administration**

1. The number of available residency positions will be determined on a yearly basis based on funding.

2. Residency positions will be advertised locally, nationally and internationally if necessary.

3. Residency positions will be available at PMH and TSRCC.

4. The Physics Residency Program Committee will **match** accepted residents to a base training site at either PMH or TSRCC.

UTDRO PHYSICS RESIDENCY PROGRAM

ADMISSIONS	**POLICY NUMBER: 2.2**
Revision date: June 12, 2006	**Section 2: Administration**

1. Admission to the Physics Residency Program follows a careful review of credentials, an interview process and approval by the Physics Residency Program Committee.

2. Candidates make an application for admission to the Program Director. Required documents are sent to the Department of Radiation Oncology.

3. Candidates must have a M.Sc. (thesis based) in Radiation oncology physics, or a Ph.D. in Physics, Biology, Computer Science, Engineering or Mathematics. Strong preference will be given to candidates with a Ph.D. in, Radiation oncology physics, Physics or a related discipline.

4. Positions available each year will be based on funding. Applications will be accepted throughout the year; however admission is in the fall only.

6. A **cover letter** summarizing expertise and achievements, updated Curriculum Vitae (CV) including a record of publications and the **names of 3 professional references** must be included in the application package. **Official transcripts** of graduate course work only may also be requested. Applications will not be processed until **ALL** required documents have been received.

7. The Program Director will be responsible for reviewing applicants' suitability.

8. Selected candidates references will be contacted to submit professional reference letters which will be reviewed by the PRPC.

9. Successful candidates will be invited to Toronto for an interview.

10. The interview process will include a formal presentation followed by an interview with the PRPC.

11. The PRPC will rank suitable candidates. The evaluation form is ***Appendix T***

12. Offers of admission will be in accordance with TSRCC and PMH policies.

UTDRO PHYSICS RESIDENCY PROGRAM

FINANCES	**POLICY NUMBER: 2.3**
Revision date: June 12, 2006	**Section 2: Administration**

1. Residents are employed by either TSRCC or PMH. Salary and benefits are set by each institution.
2. The resident has access to funding for conference travel. Expenditures of these funds require the approval of the local Head of the Medical Physics Department which is a policy that applies to all staff.

UTDRO PHYSICS RESIDENCY PROGRAM

FACILITIES	**POLICY NUMBER: 2.4**
Revision date: June 12, 2006	**Section 2: Administration**

1. Facilities for the Physics Residency Program are provided by TSRCC and PMH.

2. Each resident has a desk and work area in the Medical (or Radiation) Physics Department. Residents will be supplied a desk top computer with access to the local area network and the internet.

3. The Department of Medical Physics (TSRCC) and the Department of Radiation Physics (PMH) each have a small library with holdings mainly of radiation oncology physics related text books and reports. TSRCC and PMH each have their own library which contains medically oriented texts and journals.

4. The TSRCC and PMH are fully equipped tertiary cancer treatment facilities. Combined equipment and clinical programs include:
   - Linear accelerators (Varian, Elekta, Siemens and Tomotherapy) many with advanced accessories such as cone-beam CT.
   - Conventional simulation, CT simulation, PET/CT and MR simulation
   - HDR brachytherapy, Prostate seed brachytherapy
   - Pinnacle, Plato, X-Plan treatment planning system
   - IMRT, IGRT and Stereotactic programs, including a Gamma Knife.

5. Both the TSRCC and the PMH have an electronics shop with the full range of test and diagnostic equipment and a fully equipped machine shop.

6. TSRCC and the PMH both have dedicated computing groups within the Radiation Programs.

UTDRO PHYSICS RESIDENCY PROGRAM

ORIENTATION	**POLICY NUMBER: 2.5**
Revision date: June 12, 2006	**Section 2: Administration**

1. Incoming Residents will receive appropriate orientation at the PMH and TSRCC. Orientation will be completed in the first two months of study.

2. The orientation topics covered are outlined in ***Appendix B: Orientation***.

3. The local site coordinators will assist in coordinating orientation sessions.

UTDRO PHYSICS RESIDENCY PROGRAM

PRIVACY	POLICY NUMBER: 2.6
Revision date: June 12, 2006	**Section 2: Administration**

1. All documents pertaining to the program will be maintained in the administrative offices of the University of Toronto Department of Radiation Oncology.

2. Documents in use (e.g. Applications) will also be kept temporarily in the office of the Program Director.

3. The privacy of all information concerning residents, resident performance and instructors' performance is a priority of the Physics Residency Program.

4. All written and electronic information concerning residents, and resident and instructor performance will have access restricted to the Program Director and those designated by the Program Director.

5. Minutes of the meetings of the Physics Residency Program Committee will not be circulated beyond the membership of the committee.

SAFETY	**POLICY NUMBER: 2.7**
Revision date: June 12, 2006	**Section 2: Administration**

6. The safety of patients, staff, residents and the public is a priority at TSRCC and PMH.

7. One hour of resident orientation is designated for the Radiation Safety Officer.

8. Physical hazards such as radiation, mechanical and electrical systems are covered, as well as possible biological hazards.

9. Residents will be required to take WHMIS training (Workplace Hazardous Materials Information System).

10. Residents will be required to schedule an appointment with occupational health and safety and complete the appropriate immunizations.

UTDRO PHYSICS RESIDENCY PROGRAM

CURRICULUM DESIGN AND CONTENT	**POLICY NUMBER: 3.1**
Revision date: June 12, 2006	**Section 3: Program Requirements**

The Residency Program is designed around **five educational/training components**.

I. Clinical Rotations

A comprehensive list of clinical areas in which the resident is expected to be competent has been developed and is included in ***Appendix C: Clinical Rotation Progress Report.*** At the beginning of a rotation, the resident meets with the rotation supervisor and the local site coordinators. Objectives for the rotation, based on the competency list of Appendix C are established. It is not necessary to complete the competencies in the order in which they appear listed under each clinical rotation in Appendix C. The Record of Rotations is used to document the progress of the resident during their clinical rotations. At the end of each rotation all competencies listed under that rotation should be signed as completed. The record of rotations also allows cumulative progress to be monitored so it is possible to see at a glance what the resident has accomplished to date in the program. The rotations are:

Instrumentation: In this clinical rotation the resident will learn the principles of operation for the basic medical physics tools used for absorbed dose measurements and verification imaging.
Treatment Planning 1: This clinical rotation will provide the opportunity to develop fundamental radiation oncology treatment planning skills.
Treatment Planning 2: This clinical rotation provides the opportunity to develop competence in generating simple and complex computerized isodose distributions for each site normally treated with radiation therapy.
Treatment Planning 3: This clinical rotation builds upon principles articulated in Treatment Planning I and II courses.
Quality Management and Radiation Safety: This clinical rotation will introduce the concepts of quality management, quality assurance, quality control and continuous quality improvement and will describe the role of the Clinical Physicist in assuring quality and improving processes in radiation therapy. The clinical rotation component of the course will provide the resident with the opportunity to learn and demonstrate clinical competency in quality assurance concepts, practices, and protocols.
Inter-Disciplinary Practice: This clinical rotation provides opportunities for the resident to experience a variety of related specialties in radiation oncology practice, interact with the patient in the provision of care along the trajectory of the cancer experience, and explore the complexities of the clinical environment.
Brachytherapy: This clinical rotation contains the principles of brachytherapy treatments.
Imaging Physics: This clinical rotation allows the resident to learn the fundamentals of the various modalities used in medical imaging. In the nuclear medicine part of this rotation the resident will participate in 1 therapeutic nuclear medicine procedure.

II. Major Clinical Research Project

This longitudinal two-year course requires the resident to conduct an independent clinical research project in radiation medicine under the direct supervision of a research supervisor. The research supervisor will provide direction and support throughout the research process and ensure a suitable balance of time between the research and clinical commitments is allocated. At the conclusion of this course, the resident will have produced a proposal, a scientific presentation and, if possible, a research paper.

III. Didactic Clinical Physics Courses and Sessions

Residents will complete a series of didactic clinical physics courses. The courses are:

Radiation Biology and Radiation Safety: This course covers the fundamentals of radiation biology and radiation chemistry with an introduction to cancer bio-radiation physics. The course includes a section on the fundamentals of radiation safety in a radiation therapy department.

Clinical Radiation Physics and Dosimetry: This course serves as a comprehensive introduction to the physics of the ionizing radiation used for medical imaging and therapy and the measurement of dose.

Principles of Treatment Planning: This course addresses all aspects of radiation treatment planning providing a theoretical foundation for subsequent clinical rotation courses and professional practice.

Clinical Oncology: These sessions (given by a radiation oncologist) introduce the basic techniques of cancer management, including methods for staging and grading of disease, the role of radiation therapy in cancer treatment, basic goals and pitfalls in radiation oncology.

Health Professions in Clinical Practice: These didactic sessions will help the resident to develop a framework with which to approach multidisciplinary practice. The resident will be challenged to reflect on their professional culture, understand and role model professional behaviors, not only in the conduct of ethical science but also in interpersonal interactions with colleagues, residents and staff.

Selectives: Residents may be allowed to audit one selective course. Examples of selective courses are listed in ***Appendix D: Selectives Courses***. The choice of course will depend upon the background and interest of the resident.

Applied Physics Course: The Applied Physics course is a case-based question-and-answer tutorial held over 26 weeks in the fall and winter semesters. It is a part of the curriculum for radiation oncology residents, designed to teach and test knowledge of the basic physics issues associated with each major clinical site treated with radiation therapy. The sessions are lead by a radiation oncologist with a planning physicist in attendance. Course expectations are outlined in ***Appendix E: Applied Physics Course.***

Human Anatomy: This topic is covered with a self directed , web-based course.

IV. Tutorial/Evaluation Sessions

Tutorial sessions are used for teaching and evaluating the progress of each resident. The tutorial sessions will help to prepare the resident for the comprehensive oral examination (Peer Review A) held at the end of the program.

Radiation oncology physics Resident Tutorials: The resident tutorials are the major forum used to evaluate resident progress in the clinical rotations and didactic coursework. Weekly tutorials are conducted using a pre-set list of topics which cover most of the residency program syllabus, with the emphasis on the practical clinical aspects of the topic. Residents come prepared to answer questions on a particular topic. Questions are posed by a maximum of 3 staff medical physicists. These sessions are conducted by physicists at the local site. Details of the tutorials are outlined in ***Appendix F: Radiation Oncology Physics Resident Tutorials***. The evaluation form for the tutorials is located in ***Appendix G: Physics Resident Tutorials – Evaluation of Resident Performance.***

Year I Oral Examination: At the conclusion of the resident's first year an oral exam is taken by the resident (***Appendix H: Year I Oral Examination***). This exam will be conducted by the 2 site coordinators and will be marked as pass or fail. Areas of weakness and strength will be identified and remedial training plans will be instituted as necessary. Residents who fail the exam will be allowed to retake the exam no sooner than three months later. Residents will be required to participate in a remediation program prior to their second attempt at the oral examination. During this period, residents will be on remediation with probation.

Year II Final Oral Examination (Peer Review A): At the conclusion of the two-year program, each resident is required to present an oral presentation and defend their acquired clinical skills in an examination before a Panel of certified medical physicists. The examinations are normally held twice per year and are conducted by Cancer Care Ontario (http://www.cancercare.on.ca/index_careersclinicalphysicsresidency.htm). Additional details on the Peer Review A process can be found in this manual (***Appendix I: Year II Final Oral Examination (Peer Review A) and Appendix J: Year II Final Examination Scoring Sheet***). If a resident receives a failing grade, the resident must wait 6 months to re-take the examination and will be put onto remediation with probation.

Approximately one month before the end of the program the resident will take a "mock" examination. This exam will consist of a presentation by the resident, concerning their clinical research project and approximately 1 hour of questioning on general clinical physics. The purpose of this exam is to identify areas of weakness prior to the Cancer Care Ontario examination and prepare the resident for this oral examination.

V. Continuing Education

Residents are expected to participate in the continuing education program of the Radiation Program at their clinical site (PMH or TSRCC). Residents are expected to attend Radiation Oncology Rounds, General Rounds, Physics Rounds in addition to any lectures of relevance to their profession. The resident is required to keep a record of attendance at these sessions (***Appendix K: Attendance Continuing Education***) and submit it at the end of the Program (Refer to Policy 3.2).

In addition, the resident will be expected to make a minimum of one presentation at the Department of Radiation Oncology Residents' Research Day and present a minimum of two clinical cases at the Radiation oncology physics seminars held at their clinical site.

UTDRO PHYSICS RESIDENCY PROGRAM

REQUIREMENTS FOR SATISFACTORY COMPLETION OF THE PROGRAM	**POLICY NUMBER: 3.2**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. At the conclusion of the residency, all of the items listed in ***Appendix C: Clinical Rotation Progress Report*** must be signed off as completed by the Rotation Supervisor and the overall report approved and signed off by the Program Director.

2. The resident must successfully complete the major clinical research project.

3. The resident must attend relevant continuing education sessions and submit their completed record of their attendance (***Appendix K: Attendance Continuing Education***).

4. The resident must successfully complete the Year II Final Oral Examination (Peer Review A).

UTDRO PHYSICS RESIDENCY PROGRAM

EVALUATION OF RESIDENT PROGRESS DURING THE PROGRAM	**POLICY NUMBER: 3.3**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. Rotation Supervisors are expected to review with the resident their performance during the middle of each rotation and at the end of each rotation (***Appendix L: Resident Performance Evaluation on Clinical Rotations***).

2. Residents will be evaluated at the end of their clinical research project. (***Appendix M: Clinical Research Project Performance Evaluation*****).**

3. Physics resident tutorials and the Applied Physics Course tutorials are evaluated.

4. Formal evaluations are reviewed and signed off by the resident. A copy of the signed evaluation form is returned to the resident and the original is kept in the resident file.

5. Evaluations of each resident are presented for discussion by the Physics Residency Program Committee at its regular meetings.

6. At the conclusion of the resident's first year an oral exam is taken. This exam will be conducted by the 2 site coordinators and will be marked as pass or fail. Areas of weakness and strength will be identified and remedial training plans will be instituted as necessary. Residents who fail the exam will be allowed to retake the exam no sooner than one month later. After a second fail the resident will leave the training program and perform clinical duties as an Associate Medical Physicist until the end of their contract.

7. Approximately two months before the end of the program the resident will take a "mock" examination. This exam will consist of a presentation by the resident, concerning their clinical research project and approximately 1 hour of questioning on general clinical physics. The purpose of this exam is to identify areas of weakness prior to the Year II Final Oral Examination (Peer Review A) and prepare the resident for this oral examination.

8. A second mock may be requested by the resident or by the local coordinator.

9. At the conclusion of the 2 year program the resident is required to take the Year II Final Oral Examination (Peer Review A).

10. In the event of a failed Final Oral Examination (Peer Review A), the resident will have the option of requesting a second exam.

11. After a second failure of the Final Oral Examination, the resident shall be required to withdraw from the program, with cessation of funding.

UTDRO PHYSICS RESIDENCY PROGRAM

EVALUATION OF PROGRAM CURRICULUM	**POLICY NUMBER: 3.4**
Revision date: June 12, 2006	**Section 3: Program Requirements**

The Residency Program curriculum will be evaluated on a regular basis.

1. The maintenance of the standards and quality of the curriculum for the Physics Residency Program will be reviewed and discussed at the PRPC.

2. Continued consistency with CAMPEP requirements and AAPM Report No. 36 will be evaluated by the PRPC.

3. Clinical Rotation Evaluations, Didactic Course Evaluations and Program Evaluations will be reviewed and discussed by the PRPC (Refer Policy 3.5).

4. The PRPC will recommend improvements to the Program based on comments received and practical considerations.

UTDRO PHYSICS RESIDENCY PROGRAM

RESIDENT'S EVALUATION OF PROGRAM	**POLICY NUMBER: 3.5**
Revision date: June 12, 2006	**Section 3: Program Requirements**

The Physics Residency Program will be evaluated on a regular basis by:

Clinical Physics Rotation Evaluations

Each clinical rotation will be evaluated by the residents (***Appendix N: Clinical Rotation Evaluation by Resident***). The goal in conducting rotation evaluations is to improve the learning experience for residents in the Radiation oncology physics Program. Questions are designed to offer an opportunity to provide feedback which will assist the Program and the rotation supervisor in evaluating each clinical rotation and maintaining the standards and quality of the curricula for the Toronto Residency Program. Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Residency Committee and the rotation supervisor.

Didactic Course Evaluations

Each didactic course will be evaluated by the residents. The goal in conducting didactic evaluations is to improve the learning experience for residents in the Radiation oncology physics Program. Questions are designed to offer an opportunity to provide feedback which will assist the Program and the course supervisor in evaluating the didactic course and maintaining the standards and quality of the curricula for the Toronto Residency Program. Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Residency Committee and the course supervisor.

Supervisor Evaluations

The research, course and rotation supervisors will be evaluated at the end of each course. The questionnaire **(*Appendix O: Supervisor Evaluation by Resident*)** is designed to assist the faculty in evaluating his/her teaching effectiveness and to provide the Program Director with information for the faculty member's annual performance appraisal. Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Director and the supervisor. Supervisor evaluations are NOT reviewed by the Residency Committee.

Program Evaluation

The program evaluation is conducted at the end of each academic year of the program for each residency year. It is designed to provide residents with the opportunity to provide feedback about the Program (***Appendix P: Program Evaluation***). Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Residency Committee.

UTDRO PHYSICS RESIDENCY PROGRAM

CLINICAL ROTATIONS	POLICY NUMBER: 3.6
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. The site coordinator will assign each resident to a rotation supervisor for the period of the clinical rotation.

2. Assignment to a rotation supervisor constitutes a clinical rotation through that supervisor's area of responsibilities and expertise. The resident will be expected to have a thorough grounding in these areas by the conclusion of the period of assignment.

3. At the beginning of a rotation the supervisor, resident and site coordinator will identify and document the objectives for the rotation. These objectives will be governed by the need for acceptable progress through the competency component of the program. Completion of each objective is monitored in a cumulative manner throughout the two year program using ***Appendix C: Clinical Rotations Progress Report***.

4. The rotation supervisor is expected to meet with the resident as necessary to review progress on the basis of the Clinical Rotations Progress Report and established objectives.

5. Evaluation of the rotation and the supervisor is completed by the resident at the end of each clinical rotation (Refer to Policy 3.4). The residents' performance is assessed for each clinical rotation (Refer to Policy 3.3).

6. Achievement of competence in each rotation will be evaluated during Physics Resident Tutorials and the Oral Examinations.

7. The rotation supervisor will make every effort to accommodate the resident's commitments to their clinical research project, general clinical duties such as Quality Control, and didactic course work.

8. Requests from other physicists for assistance must be channeled through the rotation supervisor and agreed to by the resident.

9. Records for each resident will be maintained locally at each clinical site. Summaries for each resident will be maintained in the office of the Program Director.

UTDRO PHYSICS RESIDENCY PROGRAM

CLINICAL RESEARCH PROJECT	**POLICY NUMBER: 3.7**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. During the first month of residency, the resident will meet with the course supervisor for the Clinical Research Project to discuss the general requirements of the course. The resident will also meet with several staff medical physicists and other radiation medicine staff to discuss potential clinical research projects. At the end of one month it is expected that the resident and course coordinator will together identify a project for the resident and appoint a research supervisor for the research project. If possible this supervisor will also be the resident's mentor during the entire program.

2. Residents are expected to select a project which addresses an area of current interest to the Radiation Program. Residents are required to complete and submit a Clinical Research Project Plan within the first month of the Program. The research project will be approved by the research supervisor.

3. Clinical Research Project Performance Evaluations are completed by the research supervisor for each resident. Completed evaluations are reviewed by the Program Director and filed in the residents file.

UTDRO PHYSICS RESIDENCY PROGRAM

INTER-DISCIPLINARY PRACTICE	**POLICY NUMBER: 3.8**
Revision date: June 12, 2006	**Section 3: Program Requirements**

The inter-disciplinary rotations allow the resident to experience a variety of related specialties in radiation oncology practice and to observe and experience the fundamentals of the patient treatment process. The resident will spend time with radiation oncologists, dosimetrists and radiation therapists to gain an appreciation for the scope of practice of other radiation medicine professions.

1. The resident, in collaboration with the rotation supervisor, will determine appropriate patient cases based on the Patient Tracking Form (***Appendix Q: Patient Tracking Form***). It is the responsibility of the resident to contact a Radiation Oncologist (RO) treating the anatomical site of interest. The RO will identify an appropriate patient who has not yet commenced any treatment preparation processes.

2. Each resident will spend time in clinic, dosimetry, mould room, simulator (CT and Conventional), on various treatment units, in review clinic and in follow-up clinic.

3. Residents are required to follow the same patient throughout all the stages of the treatment process. It is the responsibility of the resident to determine the patient treatment times.

4. Residents are to identify their patients during the first week of the course.

Patient Management and Treatment Decisions

The resident will attend the initial patient consultation with the Radiation Oncologist and attend where possible one case meeting regarding the patients case. *The resident must have the RO initial their Patient Tracking Form indicating they have attended the patient consultation.*

Patient Planning for Radiation Therapy

It is the responsibility of the resident to review the site being treated including the epidemiology, etiology, staging, treatment modalities and side effects.

1. Immobilization – If customized immobilization is involved, the Resident will be present during the construction of shells and other devices.
2. Simulation – The resident will attend the localization and/or simulation sessions. The RO will explain the procedure (the principle for the site, margins, plan for treatment etc.) This will be a discussion to explore and improve the resident's knowledge. The resident will observe the RO as he/she performs the contouring for a CT sim patient (with regards to the standards of selecting the volumes, OARs, margins, etc.).
3. Dosimetry – The resident will observe the plan being developed by the dosimetrist and

will be present during discussion of the plan by the radiation oncologist and dosimetrist.

The resident must have the appropriate professional initial their Patient Tracking Form indicating they have attended the session.

Treatment Delivery

Following the plan approval, the resident will observe patient set-up and treatment for the first three fractions. Residents must attend Day 1 of the treatment set-up. *The resident must have the Radiation Therapist initial their Patient Tracking Form indicating they have attended the treatments.*

Review Clinic

The resident must attend a minimum of 1 review session scheduled with the RO while the patient is on treatment. *The resident must have the RO/Nurse initial their Patient Tracking Form indicating they have attended the review clinic.*

Follow-up Clinic

The resident will attend one follow-up session with the patient and the RO following the completion of treatments. *The resident must have the RO/Nurse initial their Patient Tracking Form indicating they have attended the follow-up clinic.*

The resident is responsible for ensuring his/her attendance is tracked using the form in Appendix I. The Rotation Supervisor will assign the final grade of a pass/fail to this rotation. The resident **MUST achieve a PASS**.

UTDRO PHYSICS RESIDENCY PROGRAM

EXEMPTION FROM A DIDACTIC COURSE	**POLICY NUMBER: 3.9**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. Course exemption is available for the following ***didactic courses***:
   a. Radiation Biology and Radiation Safety
   b. Clinical Radiation Physics and Dosimetry (MBP 1023H)
   c. Human Anatomy

2. Residents granted course exemptions are expected to exhibit mastery of the exempted material throughout their registration in the Physics Residency Program.

3. Course exemption is generally granted if:
   a. The resident has had comparable previous (formal) exposure to the subject matter, **and**
   b. the resident attained a minimum of a B (75%) passing grade, **and**
   c. the previous exposure occurred less than 5 years previously.

4. Each resident may be granted course exemption for only these three didactic courses. There is no partial course exemption in either course.

5. Residents are required to complete a course exemption application form. The course exemption application form and an official transcript must be submitted to the Program Director of the PRPC during the first month of the Program.

6. The PRPC adjudicates the request for course exemption. Approval or denial of course exemption will be based on submitted documentation. If further information is required, the committee may contact the applicant. It is expected that all decisions regarding course exemption will have been completed within two weeks of receiving the application. All decisions by the Committee are final.

UTDRO PHYSICS RESIDENCY PROGRAM

CONTINUING EDUCATION	**POLICY NUMBER: 3.10**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. Residents are expected to participate in the continuing education program of the Radiation Program at their clinical site (PMH or TSRCC). Residents are expected to attend Radiation Oncology Rounds, General Rounds, Physics Rounds in addition to any lectures of relevance to their profession. In particular it is required that residents attend 75% of all radiation oncology rounds, at least 2 site-based rounds per year for each of breast, lung, G.I., G.U. and Head and Neck Sites and 10 other academic rounds over the course of their program.

2. In addition, the resident will be expected to make a minimum of one presentation at the Department of Radiation Oncology Residents' Research Day and present a minimum of two presentations at the Radiation oncology physics seminars held at their clinical site.

3. The resident is required to keep a record of attendance of these sessions and submit the record at the end of the Program.

4. Residents are expected to teach medical physics to physician residents, graduate students, technologist and other allied health professionals during the applied physics tutorials, physics rounds and during the research day.

11. Residents will gain experience with teaching other radiation program professional staff during the applied physics tutorials and also at their formal presentations at physics rounds and the research day.

UTDRO PHYSICS RESIDENCY PROGRAM

EXPECTATIONS OF THE RESIDENT	**POLICY NUMBER: 3.11**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. Residents are expected to conduct themselves in accordance with the standards set by TSRCC and PMH and to seek clarification whenever necessary.

2. Residents will adhere to the applicable dress code.

3. Residents will inform the Program Director or local site coordinator of any absences (illness or otherwise).

4. Residents will appear punctually and prepared for all scheduled clinical and educational activities and meeting.

5. Residents will complete all clinical rotations and projects to the highest standards and on time.

6. Residents will report unresolved differences of opinion to the Program Director.

7. Residents will wear a personal identification tag and a personnel radiation monitor when working in clinical areas.

8. Residents will leave the personnel radiation monitor in the department at the end of the day and inform the Program Director and Radiation Safety Officer if identification tag or personnel radiation monitor becomes lost or damaged.

9. Non-compliance with the above expectations will result in performance counseling sessions with the Program Director.

UTDRO PHYSICS RESIDENCY PROGRAM

EXPECTATIONS OF SUPERVISORS AND MENTORS	POLICY NUMBER: 3.12
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. A faculty member who agrees be an Advisor is expected to:
   i. Meet regularly (a minimum of once per month) with the resident.
   ii. Be available to answer the resident's questions regarding the residency and the residency syllabus.
   iii. Monitor the resident's progress throughout the residency and offer suggestions for improvement, where necessary to the resident.
   iv. Prepare any necessary reports to document the resident's progress.

2. A faculty member who agrees be a rotation, or project supervisor is expected to:
   i. meet regularly (a minimum of every 2 weeks) with the resident.
   ii. monitor the resident's progress through the, project or rotation.
   iii. promptly read resident's reports / submitted work as required.
   iv. ensure timely completion of the project or rotation.
   v. ensure completion of the Clinical Rotation Progress Report, resident evaluations and other evaluations as necessary.

UTDRO PHYSICS RESIDENCY PROGRAM

ACADEMIC STANDING	POLICY NUMBER: 3.13
Revision date: June 12, 2006	Section 3: Program Requirements

Requirements for Standing
All residents are normally required to carry a full load of rotations and courses in each year of the program.

Good Academic Standing
To be in good academic standing in the program the resident must:
1. achieve a minimum of 70% in all didactic course work;
2. achieve a pass performance in all clinical physics rotations;
3. achieve a pass performance in the major clinical research project;

Probation and / or Remediation
A resident who fails to remain in good academic standing may be subject to a probationary period.

Probation
Probation is a period of training during which the resident is expected to correct identified serious weaknesses which are felt to jeopardize successful completion of the program. Probation implies the possibility of dismissal from the program if adequate improvement in performance is not identified at the end of the probation period.

Remediation
Remediation is a formal program of individualized training aimed at assisting a resident to correct serious identified weaknesses. This does not refer to the assistance which is usually provided within a program to help residents who are having minor difficulties. Remediation with probation implies the possibility of refusal of promotion or of dismissal if the resident is unable to or unwilling to meet the required standards of performance.

Program Extension
A resident who is currently maintaining status and making normal progress toward completing a course(s), but is unable to complete his / her didactic course or clinical rotation within the allocated time period may be granted a program extension. Program extensions are granted by the Physics Residency Program Committee. Program extensions will be considered when delays in course completion are caused by compelling academic or medical reasons. The maximum program extension is 1 year.

Program Initiated Temporary Leave
In the instance where a situation involving the resident arises requiring the program to make a rapid decision regarding course of action and where there is reason to believe that the resident, patients or the faculty are in danger, the resident will be temporarily removed from

the learning environment. This temporary leave will be for a maximum of 5 days pending a final decision from the Physics Residency Program Committee.

Withdrawal and Dismissal

The resident will be required to withdraw from the program if he or she:

1. does not meet stated academic standing requirements after one probationary period;
2. fails any 2 clinical physics rotations;
3. has a repeat failure in any clinical physics rotations;
4. fails the 2nd attempt at a course.
5. resident misconduct

Dismissal

In addition to academic failure, there are several acts that may result in termination of the resident from the program. These are outlined in the Resident Misconduct section below.

Resident Misconduct

The residents' professional activities will be characterized by honesty, integrity conscientiousness and reliability.

1. The resident will display skill at communicating and interacting appropriately with patients, families and colleagues, irrespective of race, gender, disability, political ideology, sexual orientation or religion.

2. The resident will demonstrate:
    a. The ability to work harmoniously with all members of the team
    b. Respect for the confidentiality of all patient information
    c. Professional independence, avoiding any compromise of professional integrity or conflict of interest
    d. Understanding of the appropriate requirements for involvement of clients and their families in research
    e. Recognition of the importance of self-assessment and continuing education

3. The UTDRO Physics Residency Program prohibits resident misconduct which includes, but is not limited to:
    a. Obtaining or providing, without authorization , questions or answers relating to any examination or test prior to the time of the examination or test,
    b. Obtaining or providing without authorization, resident test scores, evaluation results, or any confidential information not provided directly to the resident,
    c. Plagiarizing, that is appropriating the work of another in part or whole and passing this work as the product of one's own mind or manual skill,
    d. Failure to fully participate in scheduled rosters and / or educational activities
    e. Inappropriate professional misconduct that would violate the Canadian Organization of Medical Physicists (COMP) professional Code or Ethics or the hospital Code of Ethics, and
    f. Violation of the criminal code
    g. Breach of confidentiality

h. Non-compliance with patient Privacy Act of Ontario
i. Being under the influence of alcohol or drugs
j. Unsafe practice / threatening behaviour which can be reasonably interpreted to jeopardize the safety to fellow residents, staff and / or patients
k. Acts of willful damage to the property of the hospital

4. Any acts of alleged misconduct will be referred to the PRPC for review.

5. The PRPC may impose disciplinary sanctions up to and including the termination of a resident from the program or may impose any conditions which must be met in order for the resident to continue in the program.

UTDRO PHYSICS RESIDENCY PROGRAM

PERFORMANCE COUNSELLING	**POLICY NUMBER: 3.14**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. When it is recognized that a resident is not meeting the technical, clinical, academic, ethical or behavioural requirements of the program, the local site coordinator will meet with the resident for performance counseling**.**

2. The site coordinator will meet with the resident to discuss Program requirements. Written feedback will be provided to both the resident and to the Program Director using the Program Counseling Record (***Appendix S: Program Counseling Record***).

3. The resident will be required to attend a maximum of three Program counseling sessions with the local site coordinator. Additional counseling sessions and/or assessments will be required if deemed necessary by the site coordinator. After each counseling session, the site coordinator must provide written feedback to the resident and Program Director which documents the residents progress.

4. Failure to complete the requirements as stated during the Performance Counseling process is sufficient cause to recommend to the PRPC that the resident's position be terminated.

5. While the Program will do everything possible to assist the resident in areas requiring improvement, the resident is ultimately responsible for his/her education and should therefore take an active role in continuous self-evaluation; seeking out assistance when required.

UTDRO PHYSICS RESIDENCY PROGRAM

APPEALS	**POLICY NUMBER: 3.15**
Revision date: June 12, 2006	**Section 3: Program Requirements**

1. The resident has the right to appeal a dismissal decision made by the Physics Residency Program Committee (PRPC).

2. Grounds for an appeal are limited to the following:
    a. published regulations and procedures were not followed.
    b. all relevant evidence was not taken into consideration when a decision affecting the resident was made

3. Any resident wishing to appeal a decision of the Physics Residency Program Committee must notify the Program Director in writing of his / her intention to do so within a maximum of two weeks (10 working days) after receiving written notice of the Committee decision. The resident must explain the reasons for the appeal.

4. A separate committee will be established by the Heads of the Clinical Programs at PMH and TSRCC to consider the appeal submission. Decisions will be communicated to the resident in writing by the committee Chair. The decisions by the committee are final and may not be appealed.

Appendix A

UTDRO Physics Residency Program
PHYSICS RESIDENCY PROGRAM COMMITTEE TERMS OF REFERENCE

The Physics Residency Program Committee is responsible for:

1. oversight of the financial and human resources and implementation of the Physics Residency Program.

2. maintenance of the academic standards and quality of the curricula for the Physics Residency Program.

3. development, maintenance and review of the policies and procedures for the Physics Residency Program.

4. recommendations regarding the admission procedures and selection criteria for the Physics Residency Program. The committee is responsible for the final selection and approval of all applicants offered admission to Program.

5. review and co-coordination of the management of residents who are identified as being in academic or other difficulty.

6. review of evaluations of individual resident performance in the Program and recommendations for promotion, remediation, probation and dismissal to the Director of the Program.

7. maintainance of CAMPEP Accreditation standards for the Program.

8. confirmation that a resident has satisfactorily met requirements for completion of the program

MEMBERSHIP

1. Program Director (Chair)
2. Toronto Toronto Sunnybrook Regional Cancer Centre Local Site Co-ordinator
3. Princess Margaret Local Site Co-ordinator
4. Radiation Oncologist (appointed to the Department of Radiation Oncology University of Toronto)
5. Radiation Therapist (appointed to the Department of Radiation Oncology University of Toronto)
6. Physics Resident (alternating every 6 months between TSRCC and PMH)

MEETINGS

The committee will be scheduled to meet four times per year.

Appendix B

UTDRO Physics Residency Program
ORIENTATION

Meeting	Date	Signature Completed
Program Overview by Program Director or designate to include: 1. Program Requirements 2. Administrative Procedures 3. Training Expectations 4. Behaviour Expectations 5. Resources 6. Laboratories 7. Research Opportunities and Funding		
Department Heads		
1. Radiation oncology physics		
2. Radiation Oncology		
3. Radiation Therapy		
Manger engineering Services (electronics, machine shop)		
Chief Resident		
Chief Fellow		
Unit Managers		
Supervisor of Treatment Planning		
Supervisor of Treatment Delivery		
Radiation Program Administrator		
Radiation Safety Officer		
TSRCC or PMH Orientations		
Radiation Safety Orientation		
WHMIS		
Occupational Health		

The completed form must be submitted into the residents file.

Appendix C

UTDRO Physics Residency Program
CLINICAL ROTATIONS PROGRESS REPORT

Resident:
Rotation Start Date:
Rotation End Date:
Approval Date for PASS by Physics Residency Program Committee:

Clinical Rotation	**Date Completed**	**Clinical Rotation Supervisor Signature**
Instrumentation		
1. Orientation to dose measurement & instrumentation		
2. Review the relevant background information and local policies, procedures and specifications for each dosimetry system:	-	-
a. Ion Chambers-Electrometers		
b. TLD		
c. Film		
d. Film Processors/Printers		
e. Mosfets		
f. Diodes		
g. Portal Imaging Devices		
h. Survey Meters		
i. Matrix or equivalent system		
3. Participate in the (cross-) calibration of :	-	-
a. Ion Chambers		
b. Diodes & Mosfets		
c. TLD		
d. Film		
e. Portal Imaging Devices		
f. Matrix dosimeter		
4. Participate in and then perform the QA for the following dosimetry systems:	-	-

Clinical Rotation	Date Completed	Clinical Rotation Supervisor Signature
a. Ion Chambers		
b. Electrometers		
c. TLD		
d. Film		
e. Film Processors/Printers		
f. Mosfets		
g. Diodes		
h. Portal Imaging Devices		
i. Survey Meters		
j. Matrix or equivalent system		
5. Patient Positioning – Participate in the operation and calibration of the following for position verification:		
a. 3D Ultrasound unit (prostate)		
b. EPID (and CR unit)		
c. Implanted seeds		
Quality Management and Radiation Safety		
1. Orientation to linacs, orthovoltage, simulators		
2. Review local QA policies and procedures		
3. Review TG-51, TG-61, TG-40, TG-25, AAPM Rpt 13, & other QA references.		
4. Participate in and/or plan the siting and licencing of a Linear Accelerator.		
5. Compare/contrast with Simulator, CT-Sim, and orthovoltage room design		
6. Participate in and/or plan acceptance tests (including radiation survey) for a:	-	-
a. linear accelerator		
b. conventional simulator		
c. CT-Simulator		
7. Participate in the commissioning of a linear accelerator		
8. Design measurement plan		
9. Participate in measurements for photons and electrons		

Clinical Rotation	Date Completed	Clinical Rotation Supervisor Signature
10. Participate in evaluation & analysis of data		
11. QA		
12. Observe/Participate in 3 LINAC monthly QA sessions		
13. Observe/Participate in 3 Orthovoltage monthly QA sessions		
14. Observe/Participate in 3 Simulator and CT-Simulator monthly QA sessions		
15. Perform 3 monthly LINAC QA		
16. Perform 3 monthly Othovoltage QA		
17. Perform 3 monthly Simulator QA		
18. Participate in two machine calibrations for:	-	-
a. Linear accelerator – photons		
b. Linear accelerator – electrons		
c. Tomotherapy		
19. Orientation to radiation safety		
20. Participate in the licensing/license renewal process & review the licensing documents for:		
a. Linear accelerator		
b. HDR unit		
c. Simulator		
d. CT-Simulator		
21. Review and understand the incident reporting procedures		
22. Review the quarterly staff badge reports with the radiation safety officer		
23. Perform a fetal dose calculation		
24. Perform a leak test for the receipt of a radioisotope		
25. Perform and document a radiation survey for each of:	-	-
a. radioisotope room		
b. A high energy linear accelerator vault		
Brachytherapy		
1. Orientation to Brachytherapy		

Clinical Rotation	Date Completed	Clinical Rotation Supervisor Signature
2. Review relevant reference documents:	-	-
3. Local brachytherapy policies and procedures		
a. TG-43		
b. Treatment planning system documentation – dose calculation		
c. Khan, Ch.15		
d. ICRU 38		
e. Fletcher, Textbook of Radiotherapy, Ch. 11		
f. Int J. Rad. Oncol. Biol. Phys, 32, pp.219 – 225		
g. The Dosimetry of ionizing radiation Vol. III, Kenneth Kaset, Bjarngard & Attix, 1990, Ch. 3		
h. Other references to be determined		
4. Participate in 2 HDR source changes, calibrations, and associated quarterly QA (include radiation survey)		
5. Participate in 3 daily QA		
6. Participate in 1 annual QA		
7. Review commissioning and acceptance testing of the brachytherapy treatment planning system and remote after-loading equipment		
8. Review the literature on the following:	-	-
a. Interstitial implants		
b. Intravascular implants		
c. Eye plaques		
9. Participate in planning and treatment support for:	-	-
a. Prostate seed implant		
b. Cervix HDR		
c. Prostate HDR		
d. Breast seed implant		
Treatment Planning I		
1. Orientation to treatment planning systems		
2. Review relevant reference documents including:	-	-

Clinical Rotation	Date Completed	Clinical Rotation Supervisor Signature
a. TG-53		
b. Technical Report Series 430		
3. Review the relevant treatment planning documents concerning:	-	-
a. Dose calculation algorithms and models		
b. Heterogeneity corrections		
c. Dose volume histograms		
d. Image processing, image fusion, data sets		
e. Treatment planning system manuals		
4. Review local treatment planning policies and procedures		
5. Participate in and/or plan an acceptance test for a three-dimensional treatment planning system		
6. Participate in commissioning a linear accelerator on the treatment planning system		
7. Participate in the QA of the treatment planning system		
8. Create at least 1 water phantom treatment plan for QA or testing purposes for electrons and photons, include documentation of the test in a report.		
Treatment Planning II, III		
1. Develop treatment plans using standard techniques for the following sites:	-	-
a. Head/Neck		
b. Breast		
c. Lung		
d. Gynecological and Genitourinary (Pelvic)		
e. Sarcoma		
f. Lymphoma		
g. Peadiatric		
h. Gastro-Intestinal		
i. Prostate Brachy therapy		
j. Gynecological Brachytherapy		
k. Total Body Irradiation		
l. Stereotactic Radiosurgery		

Clinical Rotation	Date Completed	Clinical Rotation Supervisor Signature
m. Stereotactic Radiotherapy		
n. Intensity Modulated Radiation Therapy		
2. Review the literature on Total Skin Electron Radiotherapy		
3. Physics procedures for the introduction of a new treatment modality or technique.		
Inter-Disciplinary practice (Appendix Q: Patient Tracking Form must be completed for each disease site before signing off the Progress Report)		
Breast		
Head and Neck		
Pelvic (Gynae, GU)		
Pediatrics		
Total Body Irradiation		
Stereotactic Radiosurgery		
Imaging Physics		
Fundamental of operation and image formation for:		
X-ray systems		
CT, cone-beam CT		
Ultrasound		
Magnetic Resonance		
Radioisotope Imaging (Gamma cameras, SPECT, PET)		
For each of the above modalities, observation of a clinical study		
For each of the modalities, observation of the utility in radiation oncology		
Participation in the physics aspects of 1 therapeutic nuclear medicine procedure.		

Signature of Resident

Signature of Program Director

Date **Date**

The completed form must be submitted into the residents file.

Appendix D

UTDRO Physics Residency Program
CLINICAL RESEARCH PROJECT PLAN

Resident:
Research Supervisor:
Report Due Date:

PROJECT TITLE:

Methodology (Project overview (statement of problem, specific aims, methodology, timeline, personnel involvement, resource availability / requirements)

Benefit to the Resident (expected publications(s), conference presentations, patents, etc)

Benefit to the Program (enabling clinical technologies, fundamental knowledge acquisition, technique improvements, etc)

Signature of Resident	**Signature of Research Supervisor**
Date	**Date**

The completed form must be submitted into the residents file.

Appendix E

UTDRO Physics Residency Program

APPLIED PHYSICS COURSE

1. The objective of these tutorials are to enhance the Resident's clinical physics knowledge on site-based topics, and to improve their inter-disciplinary communication skills. For each treatment site and special radiation therapy method, the Residents are expected to learn and understand the intent of the therapy, the target volumes to be treated (e.g. GTV, CTV, and PTV), treatment techniques, typical doses and fractionation, critical structures and their TD 5/5 values, general anatomy, simulation and planning, the physics issues involved (e.g. scatter, inhomogeneity and contour corrections, matching fields effects of wedges, bolus, compensators, SAD vs. SSD setup, MU calculations, etc.).

2. Physics residents are expected to attend and prepare answers to the questions asked at these sessions. The course is a part of the Radiation Oncology Residents program and will also be attended by PGY-3 and PGY-4 Radiation Oncology residents.

3. Tutorials will be attended by one or more staff radiation oncologist, physicist and dosimetrist. They will ask questions and help with answers. The assigned radiation oncologist and physicist are expected to attend these sessions, booking themselves off clinical responsibilities if necessary. Should they not be able to, it is the responsibility of the assigned radiation oncologist and physicist to find someone to take their place at the session.

Appendix F

UTDRO Physics Residency Program
PHYSICS RESIDENT TUTORIALS

1. Attendance at Physics Resident Tutorial sessions is a required component of the Residency program. These sessions are the main evaluation tool for competencies gained during the clinical rotations. Each residents will be evaluated on each topic and must receive satisfactory on all topics to receive a pass. There are approximately 20-25 evaluations.
2. The session will be held bi-weekly throughout the program beginning winter semester of the first year at both the PMH and the TSRCC.
3. Tutorials are lead by a local staff physicist and are attended by up to 3 additional staff physicists.
4. The resident sessions' main objectives are to provide a practice forum for the residents and an evaluation of resident progress for staff physicists. The format is to discuss fundamental clinical physics issues related to the clinical rotations as well as advanced concepts. These are oral question-answer sessions with residents taking a turn at the blackboard to answer questions posed by the staff physicists on the pre-selected topic. Residents are encouraged to use diagrams, graphs and/or equations to support their answer.
5. Residents are expected to have studied and prepared in advance for these sessions. The Residents are expected to have read all the necessary material, and planned sample treatment site cases on Pinnacle prior to the class.
6. The Resident session topics are listed below. This list serves as a guideline and does not pre-determine the order of topics. The list can be rearranged or a particular topic could be expanded. All topics listed should be covered and additional topics added if deemed necessary. The list also provides a guideline for studying, and the residents should study the complete subject, even if the topic is not covered in the tutorial.

<u>Scheduling Tutorials</u>

Residents are responsible for coordinating their tutorials with the help of the secretarial staff. They must specify which topic they will address in the tutorial with the following provisions:

a. Effort should be made to follow the order suggested in the list.
b. Effort should be made to avoid cancellation of the session.
c. The resident must come prepared (i.e., have studied) for the session.
d. All topics in the list should eventually be covered.
e. Note that the nature of the flexibility also means that each resident could address a different section of a topic in a given session.

<u>Reference List</u>

1. ICRU Reports 50 and 62.
2. Int. J. Radiation Oncology Biol. Phys. Vol. 21, pp. 109-122.
3. F.M.Khan, “The Physics of Radiation Therapy”. 3rd edition.
4. Van Dyk, “Modern Technology of Radiation Oncology.”
5. CCPM Membership Exam Practice Questions, Parts III and IV (2005 edition)

6. RAPHEX Compendia of Radiation oncology physics Practice Questions (1999-200 versions)

The references provide a starting point. **The residents should compile their own material and hopefully expand the list for future residents.** It is suggested that the residents consult physicists for appropriate reference material.

Resident Topic List

The first reference is based on Johns & Cunningham, except as noted. The second bracketed reference refers to the Training Syllabus.

1. Interaction of Ionization with Matter and Basic Interaction of Photons with Matter (Ch.5, 6); (section I: I,II,III,IV)
2. Measurement of Radiation, Dosimetry, Quality of X-rays (Ch. 7 & 8); (section I: VI, VII)
3. Equipment and QA (Ch. 4, and QA Documents); (section I: V, IX)
4. Calibration, TG-21, TG-51 ( ) ; (section I: VIII)
5. Interaction of Single Beams of X-rays with medium (i) (Ch. 10); (section I: X)
6. Interaction of Single Beams of X-rays with medium (ii) (Ch. 10 - more calculations); (section I: X)
7. Treatment Planning - Single Beams, and Dose Calculations Algorithms (Ch. 11.01 - 11.06); (section I: X)
8. Treatment Planning - Combinations of Beams (i) (Ch. 12.01 - 12.06); (section I: X)
9. Brachytherapy (i) (Ch. 13.01 - 13.13); (section I: XI)
10. Brachytherapy (ii) (LDR, HDR, Prostate Implant); (section I: XI)
11. Modern Radiotherapy techniques (advanced calculation algorithms - pencil beam, collapsed cone, Monte Carlo, etc.)(MLC, Portal Imager, Dose Gel) ( ); (various sections of the syllabus)
12. Imaging (CT, MRI, etc)
13. Radiation Protection (Ch. 15); (section II)
14. Radiobiology (Ch. 17); (section III)
15. Treatment Planning Techniques (i) - Breast
16. Treatment Planning Techniques (ii) - Prostate
17. Treatment Planning Techniques (iii) - Head & Neck
18. Treatment Planning Techniques (iv) - CNS
19. Treatment Planning Techniques (v) - Lung
20. Treatment Planning Techniques (vi) - Electrons
21. Treatment Planning Techniques (vii)- Brachytherapy - LDR
22. Treatment Planning Techniques (viii)- Brachytherapy - HDR
23. Treatment Planning Techniques (ix) - Brachytherapy - Prostate Implant
24. Treatment Planning Techniques (x) - IMRT
25. Treatment Planning Techniques (xi)- Radiosurgery syllabus reference for 15-25 is (sections IV,V)

Evaluation

The residents will be evaluated after each session.

Appendix G

UTDRO Physics Residency Program
PHYSICS RESIDENT TUTORIALS – EVALUATION OF RESIDENT PERFORMANCE

At each resident tutorial 2 to 4 staff physicists will attend and evaluate the performance of a resident on a particular topic. Each topic will have several questions. If a resident fails a topic (unsatisfactory grades on several questions), then that topic must be repeated after a remediation plan has been completed. Each physicist will complete a tutorial evaluation sheet at the end of each tutorial and submit these to the Site Coordinator. The resident must pass ALL topics to successfully complete the resident tutorials

Resident:
Physicist:
Date of Evaluation:

Topic 1:	**Satisfactory(yes/no)**	
1		
2		
3		
4		
5		
Comments:		

Topic 2:	**Satisfactory (yes/no)**	
1		
2		
3		
4		
5		
Comments:		

Signature of Resident (signifies evaluation has been discussed with resident)

Signature of Evaluator

Date

Date

All completed forms will be kept in the residents program file.

Appendix H

UTDRO Physics Residency Program
YEAR I ORAL EXAMINATION

1. The Review will be conducted by a minimum of 3 senior faculty. One examiner must be a senior physicist from either TSRCC or PMH.
2. There will be general radiation oncology physics questions which evaluate the candidate's knowledge of clinical radiation oncology physics. Questions on general Radiation oncology physics will be selected at random from a prepared question bank . The resident's responses could lead to supplementary questions not found in the question bank. The contents of the question bank will be kept confidential and maintained by the Program Director.
3. To pass the Year I oral examination, the resident must achieve an average score of 70%. If two or more reviewers fail the resident, the resident will receive a failing grade regardless of the other reviewers' scores. If the resident fails the examination they will be not be allowed to re-attempt the examination for 3 months. During this time the resident will be required to follow a remediation plan.
4. A resident will be notified as soon as possible of the result and this will be confirmed in writing.
5. A resident may request feedback, with respect to the results, from the program director.

Appendix I

UTDRO Physics Residency Program
YEAR II FINAL EXAMINATION (PEER REVIEW A)

1. Applications to take a Peer Review will be submitted by the candidate to the Program Director.
2. An application will include a current curriculum vitae, an abstract of an oral presentation (20-minutes or as defined in instructions from the chair of the review committee) on a clinical topic to be made by the applicant during the review, and copies of all of the candidates evaluation forms.
3. The Review will be conducted by 3 senior (or chief) physicists and a radiation oncologist. At least one of these must be from a centre other than the PMH or TSRCC.
4. Peer Reviews will normally be held twice per year- once in the fall and once in the spring. Dates will be posted at least 3 months in advance. Applications must be submitted at least 2 months in advance of the applicable Review date.
5. The Review will consist of an oral presentation followed by in-depth examination of that subject. In addition there will be general radiation oncology physics questions which evaluate the candidate's knowledge of clinical radiation oncology physics.
6. The candidate's interpersonal skills, clinical physics accomplishments, written communication skills and planning and organising ability will be assessed and scored by the candidate's advisor prior to the examination.
7. The advisor’s assessment will be submitted in writing to the Chair of the examining committee at the time of the examination after the other examiners have completed their scoring.
8. Questions on general Radiation oncology physics will be selected at random from a prepared question bank of not less than 100 questions. Candidate's responses could lead to supplementary questions not found in the question bank. The contents of the question bank will be kept confidential and maintained by the Program Director.
9. To pass the Review the candidate must demonstrate a degree of competence which would indicate that the candidate is able to carry out clinical physics duties safely and effectively with minimum supervision.
10. If two or more reviewers fail the candidate, the candidate will receive a failing grade regardless of the other reviewers' scores. If the resident fails the examination they must wait 6 months to re-attempt the examination. During this time the resident will be required to follow a remediation plan and will be placed on remediation with probation status.
11. A candidate will be notified as soon as possible of the result and this will be confirmed in writing.
12. A candidate may request feedback, with respect to the results, from the sponsoring chief.

Appendix J

UTDRO Physics Residency Program
YEAR II FINAL EXAMINATION SCORING SHEET

Candidate:	**TSRCC**		**PMH**	
Reviewer:				
Date of Review:				

Section I:

CATEGORY	MAXIMUM SCORE	CANDIDATE'S SCORE
Residency Project		
i. Project Evaluation	**3**	
ii. Quality of Project Work	**7**	
iii. Presentation	**5**	
iv. Defense	**10**	
Oral Communication Skills	**8**	
Clinical Physics Skills		
i. External Beam	**15**	
ii. Brachytherapy	**7**	
iii. Radiation Protection	**8**	
iv. Radiation Oncology	**5**	
v. Radiobiology	**5**	
TOTAL SCORE SECTION I	**73**	

Section II: The following scores are determined by the mentor

CATEGORY	MAXIMUM SCORE	CANDIDATE'S SCORE
Written Communication Skills	**7**	
Clinical Physics Accomplishments	**20**	
Interpersonal Skills	**15**	
Planning and Organization	**5**	
TOTAL SCORE SECTION II	**47**	

FINAL OVERALL SCORE /120

Note: To pass Peer Review, the candidate must obtain a total score of at least 85 points with a minimum requirement of half the maximum score in each category.

Final Result

Pass ☐ Fail ☐

Signature of Peer Reviewer

Date

The completed form must be submitted into the residents file.

Appendix K

UTDRO Physics Residency Program
ATTENDANCE CONTINUING EDUCATION

Resident:	**TSRCC**		**PMH**	
Mentor:				
Date training started:				

In-services, Continuing Education Rounds, Conferences (additional pages may be used if required)			
Date (mm/dd/yr)	**Title**	**Speaker**	**Type of Rounds**

Date of Presentation at the Department of Radiation Oncology Residents' Research Day	
Topic of Presentation at Research Day	
Date of Presentation 1/ Topic	
Date of Presentation 2 / Topic	

Signature of Resident **(signifies authenticity of attendance)**

Date

Signature of Program Director

Date

The completed form must be submitted into the residents file.

Appendix L

UTDRO Physics Residency Program
PERFORMANCE EVALUATION ON CLINICAL ROTATIONS OF RESIDENT

Resident:	**Clinical Rotation:**
Rotation Start Date:	**Rotation Finish Date:**
Date of Evaluation:	**Rotation Supervisor:**
Formative Evaluation: ☐	**Summative Evaluation:** ☐

Each criterion should be assigned a score based on the scale provided. The score should reflect the perspective of more than one person where possible and should be based on multiple events over a period of time. Residents are evaluated according to the **expected performance of a qualified Physicist.**

Below Expectations = Resident performs below standard
Satisfactory = Resident performs to standard on a consistent basis
Outstanding = Resident performs above expected standard

Any recurrent "below expectations" between the formative and summative evaluation may be grounds for failure. This could be a recurrent score on a single criterion or a score received within the same category (Example: Communication). Any "below expectations" should be discussed with the resident during the formative evaluation and a plan of action developed to improve the identified area of weakness. ***Categories identified with an asterisk in this section must receive a "satisfactory" to pass the evaluation.***

Criteria	Below Expectations	Satisfactory	Outstanding	Comments
Communication				
Verbal (as demonstrated by appropriate language / grammar, pronunciation of words, well-paced speech, good volume of voice, able to convey central ideas; appropriate level of detail in responses)				
Non-Verbal (appropriate posture, facial expressions, listening skills, eye contact)				
Written Communication (Documentation)				
Interpersonal Skills				
Judgment (as demonstrated by responses to situational questions; anticipation, analysis and reaction to problems)				
Initiative (as demonstrated by responses to assess own knowledge, skills, and abilities accurately; sets well-defined and realistic personal goals; seeks advice and guidance when appropriate; contribution of innovative ideas)				
Team work (as demonstrated by treating all team members with respect; responding positively to change and challenges; recognizing various roles of team members and collaborating when required)				
Safety *				
Competent to perform all objectives of the clinical rotation *				

Signature of Resident (signifies evaluation has been discussed with resident)

Signature of Rotation Supervisor

Date

Date

All completed forms will be kept in the residents program file.

Appendix M

UTDRO Physics Residency Program
CLINICAL RESEARCH PROJECT PERFORMANCE EVALUATION

Resident:	**Clinical Rotation:**
Project Start Date:	**Project Finish Date:**
Date of Evaluation:	**Research Supervisor:**
Formative Evaluation: □	**Summative Evaluation:** □

Project Title: _____

Project completed successfully? Yes ☐ No ☐

Criterion (Mark a number from 1 to 5 for each question)	**Poor**	**1**	**2**	**3**	**4**	**5**	**Excellent**	**N/A**
1. Project completed in an appropriate time frame	Poor						Excellent	
2. Documentation quality	Poor						Excellent	
3. Objectives understood	Poor						Excellent	
4. Project significance and value understood	Poor						Excellent	
5. Results understood	Poor						Excellent	
6. Communication of results and significance	Poor						Excellent	
7. Independence of action	Poor						Excellent	
8. Equipment handling	Poor						Excellent	
9. Teaching effectiveness	Poor						Excellent	
10. Deliverables I (conference presentations)	Poor						Excellent	
11. Deliverables II (peer-reviewed publications)	Poor						Excellent	

Research Supervisor Comments

Resident Comments

Signature of Resident **(signifies evaluation has been discussed with resident)**

Signature of Research Supervisor

Date

Date

All completed forms will be kept in the residents program file.

Appendix N

UTDRO Physics Residency Program
CLINICAL ROTATION EVALUATION BY RESIDENT

Clinical Rotation:	**TSRCC**		**PMH**	
Rotation Supervisor:				
Date:				

Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Residency Committee and the rotation supervisor.

1. **Did you receive the rotation objectives?** Yes ☐ No ☐
2. **Were the rotation objectives reviewed with you?** Yes ☐ No ☐
3. **Interactions with faculty and teaching staff** (Circle a number from 1 to 5 for each question):

environment was	unpleasant/unfriendly	**1**	**2**	**3**	**4**	**5**	pleasant/friendly
staff were	inaccessible	**1**	**2**	**3**	**4**	**5**	accessible
participation	minor, superficial	**1**	**2**	**3**	**4**	**5**	meaningful
time for teaching	poor	**1**	**2**	**3**	**4**	**5**	excellent
teaching sessions	poor	**1**	**2**	**3**	**4**	**5**	excellent

4. **Did the rotation allow you to meet the objectives?** Yes ☐ No ☐
5. **Overall was this an effective rotation?** Yes ☐ No ☐
6. **Were there adequate clinical resources for your rotation?** Yes ☐ No ☐
   If no, please explain.
7. **Please identify the strengths of this rotation** (use back of this page if necessary).
8. **Please provide suggestions for improvement of this rotation?** (Use back of this page if necessary)**.**

Appendix O

UTDRO Physics Residency Program
SUPERVISOR EVALUATION BY RESIDENT

Clinical Rotation:	**TSRCC**		**PMH**	
Rotation Supervisor:				
Date:				

Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Director and the supervisor. Supervisor evaluations are NOT reviewed by the Residency Committee.

Circle a number 1 to 5 for each question.

1. **Supervisor's ability to teach materials in objectives.**

Poor	1	2	3	4	5	Excellent

2. **Supervisor's knowledge of material in objectives.**

Poor	1	2	3	4	5	Excellent

3. **Learning environment created by supervisor.**

Poor	1	2	3	4	5	Excellent

4. **Effective and timely feedback regarding performance.**

Poor	1	2	3	4	5	Excellent

5. **Overall teaching ability.**

Poor	1	2	3	4	5	Excellent

Comments

Appendix P

UTDRO Physics Residency Program
PROGRAM EVALUATION BY RESIDENT

Individual evaluations will be submitted anonymously to the Program Director from both clinical sites and a summary of the results will be reviewed by the Program Residency Committee.

Please identify the program's strengths (be specific):

-
-
-
-
-
-

Please identify any weaknesses in the program:

-
-
-
-
-
-

Please provide constructive criticism and recommendations for improving the program:

-
-
-
-
-
-
-

Appendix Q

UTDRO Physics Residency Program
Interdisciplinary Rotations
(Reference: Policy 3.6)

PATIENT TRACKING FORM

Anatomical Site	Specific Disease Site	Patient Management and Tx Decisions (Radiation Oncologist, Surgeon, Medical Oncologist etc.)	Patient Planning for Radiation Therapy (Radiation Oncologist, Radiation Therapist, Dosimetrist)						Treatment Delivery Radiation Therapist)			Review Clinic (RO, Nurse)	Follow-up (Radiation Oncologist)
			Immobilization	CT Simulator	Conventional Simulator	Dosimetry	Beam Modifiers	Other					
Breast													
Head and Neck													
Pelvic (Gynae, GU)													
Pediatrics													
Total Body Irradiation													
Stereotactic Radiosurgery													

Signature of Resident: _____ **Date** _____

Signature of Rotation Supervisor: _____ **Date** _____

Pass / Fail: _____

The completed patient tracking form will be kept in the residents program file.

Appendix R

UTDRO Physics Residency Program
SELECTIVE COURSES

MSC 1501 - Frontiers in Radiation Medicine Research
This course will provide residents with an overview to research methodology in the context of radiation medicine, as well as exposure to research projects being carried out in the University of Toronto Department of Radiation Oncology.

MBP 1018Y - Oncology
This one-year course is a broad survey of present day treatment and research on cancer. The course examines a single type of cancer in depth. Residents are exposed to clinical, epidemiological and basic aspects of a specific type of cancer using a comprehensive approach. It is offered once per year. Limited enrollment, pending on space availability.

MBP 1026H - Clinical Imaging for Physical Scientists
A course providing an introduction to human anatomy and physiology from the perspective of clinical imaging. Basic normal anatomy and physiology will be presented from a radiological perspective and structured according to the major organ systems. Three anatomy labs will be included. Examples of specific disease processes will be considered together with findings from X-ray, computed tomography, ultrasound, radionuclide and nuclear magnetic resonance imaging. Assessment by course assignments and a final seminar project.

MBP 1028H - Optical, Thermal, and Radiation Biophysics
The wide variety of diagnostic and therapeutic applications of optical, thermal, and radiation biophysics in today's medical practice are discussed in this course. The physical and biophysical interaction mechanisms between the energy sources and tissue are emphasized. Fundamentals of optical, thermal, and radiation dosimetry are covered, with reference to the relevant tissue properties, the models of energy propagation within tissues, experimental techniques for dosimetry measurements, and the resulting biological effects. This sets the stage for discussing selected clinical and investigational uses of light, heat, x-rays, microwaves, and ultrasound. Examples include radiation therapy, x-ray and optical mammography, fluorescence imaging and spectroscopy, optical coherence tomography, photodynamic therapy, biological confocal microscopy, laser-, microwave-, and ultrasound-induced thermal therapies, and Raman spectroscopy.

BME 1439H Clinical and Biological Instrumentation
Detailed review of patient-oriented technology in the clinical environment -- specifically, the diagnostic or therapeutic significance, function, engineering principles, hazards, calibration, cost-effectiveness, and new developments. Prerequisites: Undergraduate control systems course, Fortran or equivalent programming experience, elementary knowledge of information theory and computing systems, some knowledge of Physiology and Anatomy.

JEB 1433H – Medical Imaging
Medical imaging continues to expand in its role throughout virtually all aspects of medical care.

Analytic considerations of noise, contrast, resolution and information content are used in the analysis of medical imagery. Concepts of linear systems theory and stochastic processes are used to develop approaches for image evaluation and filtration. The mathematical details of image reconstruction will be reviewed along with their application to medical imaging. The basic physics associated with the interactions of x-rays, ultrasound and optical radiations with tissue will be reviewed and the details of medical imaging based on these interactions will be covered. The fundamentals of NMR will be reviewed leading to a detailed study of the principles of proton magnetic resonance imaging. Emerging applications in quantitative imaging which elucidate physiologic function including flow, perfusion, hemodynamics and brain activation studies will be highlighted. Current trends in the use of medical imaging in minimally invasive medical therapeutics will be reviewed. The course requires a good founding in undergraduate physics and mathematics as prerequisites.

Appendix S

UTDRO Physics Residency Program
PROGRAM COUNSELING RECORD

Resident Name:		**Resident Year:**	
Date of meeting:		**Initiated by**:	

Reason for Meeting:
-

Results and identified course of action/timelines:
-

Faculty name:	**Faculty Signature:**
Date:	

Resident Comments:
-

Resident name:	**Resident Signature:**
Date:	

Follow-up Notes:
-

All completed forms will be kept in the residents program file.

Appendix T

University of Toronto Department of Radiation Oncology
Physics Residency Program
Candidate Evaluation Form

Candidate:
Date:
Admission Committee Member:

The Admissions Committee members will evaluate the potential candidate for admission into the Toronto Residency Program in Radiation Oncology Physics using the following criteria to evaluate the application package, presentation and interview. Each Admission Committee member will complete one candidate selection form per applicant. The Admission Committee will meet and review the summarized results of the application process. A Selection Summary Form will be completed by the admissions committee chair.

Interview			
Criteria	Not Acceptable	Acceptable	Exceptional
Knowledge in field of clinical radiation oncology physics			
General medical physics including topics of radiation physics, radiation protection, dosimetry, radiation biology, medical imaging, treatment planning, anatomy and physiology and basic clinical oncology			
General knowledge of current medical physics practice, issues and common data sources			
Communication Skills			
Verbal (as demonstrated by appropriate language / grammar, pronunciation of words, well-paced speech, good volume of voice, able to convey central ideas; appropriate level of detail in responses)			
Non-Verbal (appropriate posture, facial expressions, listening skills, eye contact)			
Interpersonal Skills			
Judgment (as demonstrated by responses to situational questions)			
Initiative (as demonstrated by responses to assess own knowledge, skills, and abilities accurately; sets well-defined and realistic personal goals)			
Motivation (as demonstrated by responses to propel the department forward)			
Leadership (as demonstrated by responses to build			

colleague relations, take responsibility and incorporate effective decisions making skills			

Application Package			
Criteria	Not Acceptable	Acceptable	Exceptional
Publications and Accomplishments			
Academic Contribution to field of study			
Experience Relevant to Medical Physics			

Presentation			
Criteria	Not Acceptable	Acceptable	Exceptional
Structure of Presentation (as demonstrated by a clear, order presentation with an introduction, methods, results, conclusions and good visual aids)			
Knowledge (as demonstrated by ability to competently answer all questions from committee)			

Global Rating			
Criteria	Not Acceptable	Acceptable	Exceptional
Potential for academic contribution to the department			

General Comments:

_____

_____

Recommendation:

_____

_____

Admission Committee Member Signature: _____

Date: _____