

Department of Oncology Graduate Handbook 2010-2011



DEPARTMENT OF ONCOLOGY

FACULTY OF MEDICINE & DENTISTRY

UNIVERSITY OF ALBERTA



Cross Cancer Institute

In Partnership with Alberta Health Services



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Graduate Program

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1. INTRODUCTION

1.1 The Department of Oncology Graduate Program

The Department of Oncology is a research-oriented department that provides a focus for cancer-related teaching and research within the Faculty of Medicine and Dentistry. The Department is based at the Cross Cancer Institute (CCI), a tertiary cancer facility operated by Alberta Health Services that provides cancer care to northern Alberta. The Department offers thesis-based M.Sc. and Ph.D. degrees. It has seven academic divisions: Experimental Oncology, Medical Oncology, Medical Physics, Oncologic Imaging, Palliative Care Medicine, Radiation Oncology, and Surgical Oncology. Two of the divisions, Experimental Oncology and Medical Physics, are regarded as specializations and largely oversee the administration of their own graduate programs. In addition to the specializations the Department of Oncology offers a General Program designed to provide greater flexibility than the specializations and thereby accommodate a wider range of disciplines and activities. Supervisors may choose to admit students through the specializations or through the General Program.

1.2 Role of the Associate Chair of Graduate Studies, the Advisory Committee to the Associate Chair and of the Graduate Program Administrator

The office of the Associate Chair of Graduate Studies in Oncology acts as a liaison with the Faculty of Graduate Studies and Research (FGSR) and oversees the entire graduate program. The Associate Chair is aided by the Advisory Committee to the Associate Chair. The Advisory Committee includes among its membership representation from the General Program, Experimental Oncology and Medical Physics. The mandate of the committee is to make policy recommendations for the overall governance of the Oncology Graduate Program. All paperwork (admission enquiries, forms, correspondence, etc.) is processed by the Graduate Program Administrator (Ms. Cheryl Erickson), and by Ms. Cathy Walsh, Student Program Assistant who assist the Associate Chair by maintaining graduate student records and by acting as the interface between the FGSR, and the Department.

1.3 Role of the Experimental Oncology Graduate Coordinator and the Experimental Oncology GCC

The Graduate Coordinator in Experimental Oncology is responsible for the administration of the Graduate Program within the specialization of Experimental Oncology. The current Graduate Coordinator, Dr. Roseline Godbout, is assisted in this task by the Experimental Oncology Graduate Coordinating Committee (EOGCC). The role of the EOGCC is to approve or reject student admissions, to assist in facilitating appropriate supervisor-student pairings, to monitor the progress of graduate students within the specialization, to review Ph.D. proposals, and to set regulations for students within the specialization. Current members of the GCC in addition to Dr. Roseline Godbout are Dr. David Murray (the Divisional Director); Dr. Gordon Chan; Dr. Michael Hendzel; Dr. Mary Hitt; Dr. John Mercer; Dr. Jack Tuszynski; the Departmental Chair, Dr. Sandy McEwan (ex-officio), Ms. Cheryl Erickson (Graduate Program Administrator); and the current Associate Chair Graduate Studies, Dr. Andrew Shaw (ex-officio).

1.4 Role of the Medical Physics Graduate Coordinator and of the Medical Physics GCC

The Graduate Coordinator in Medical Physics is responsible for the administration of the Graduate Program within the specialization of Medical Physics. The current Graduate Coordinator within the specialization of Medical Physics is Dr. Gino Fallone (Divisional Director) and is assisted in this task by the Medical Physics Graduate Coordinating Committee (MPGCC).

1.5 Role of the General Program Graduate Coordinator and of the General Program GCC

Currently the Associate Chair of Graduate Studies is also the interim Coordinator of the General Program and is assisted in this task by the General Program Graduate Coordinating Committee (GPGCC). The current composition of the committee is: Dr. Vickie Baracos; Dr. Konrad Fassbender; Dr. Michael Hendzel; Dr. John Mercer; Dr. Jack Tuszynski, and the Department Chair, Dr. Sandy McEwan (ex-officio). As the General Program develops the GPGCC will appoint a Graduate Program Coordinator and the Associate Chair of Graduate Studies will become ex-officio.

2. ADMISSION

All students wishing to pursue graduate studies in the Department of Oncology should contact the Graduate Program Administrator. Students are invited to visit the departmental website at <http://www.graduate-studies-in-cancer-research.org/index.html> where they can obtain more information about the Department, staff, graduate program, research opportunities, core facilities and training awards. Students are encouraged to apply on-line. The Graduate Program Administrator will act as a liaison with the student and prepare a file containing all the documents necessary for consideration for admission. That file will reside in the office of the Oncology Graduate Program and a copy will be immediately forwarded to the appropriate Graduate Coordinator on completion.

2.1 Admission Requirements

The minimum requirement for entry into the Department of Oncology is an undergraduate degree in a relevant field or a professional Health Sciences degree (eg. MD, BSc.N) in a relevant field with demonstrated excellence in academic work (*i.e.*, a GPA of 3.3 on the University of Alberta 4.0 point scale or a B+ on the letter grade scale). To enter the Specialization of Medical Physics students must have at minimum an Honours BSc/B Eng in Physics or in Engineering Physics respectively with at least a GPA of 3.3 on the 4 point scale.

Students may apply at any time of the year, but are strongly encouraged to start their program in September. Medical Physics students can only start in September. Students from Canada should allow a minimum of two months for processing of their application. Foreign students should allow at least 4 to 6 months for processing of the application, depending on country of origin. To optimize their chances of securing one of a limited number of places, students are encouraged to apply up to a year ahead of their proposed start date.

Students whose academic standing is too low to allow direct acceptance into the graduate program, or with a recognized weakness in the area of their specialization may in some cases be accepted as qualifying students or as students admitted subject to certain conditions (the categories are explained in the University Calendar under Section 203.2.2). This status normally applies for a year or less and allows the student to take courses to improve their academic standing. The FGSR will allow students admitted with conditions or qualifying students to participate in research activities during this period, but only with specific permission from the supervisor and the Department. If students perform satisfactorily in their courses and are felt to be fully qualified, they will be admitted into the graduate program. Graduate level courses taken by probationary students, but not by qualifying students, count towards the final degree.

International students from countries in which English is not the primary language of instruction are required to take the Test of English as a Foreign Language (TOEFL) exam. A score of no less than 100 on the iBT (internet-based version) is required for entry into the Department of Oncology. In some cases, the International English Language Testing System (IELTS) can be substituted for the TOEFL exam. For the IELTS, an average score of at least 7 with a score of at least 6 in each of the four modules (Listening, Academic Writing, Academic Reading and Speaking) is required. The Pearson Test of English Academic (PTE Academic) has recently been added as an acceptable examination for demonstrating English language proficiency. A minimum PTE score of 68 is required. In addition, Graduate Record Exam (GRE) scores for the Experimental Oncology specialization in the 75th percentile or better are required. For Medical Physics, a GRE score of 850 is required.

Students possessing the basic requirements for admission should complete the *Application for Admission* form which is available at <http://www.gradstudies.ualberta.ca/apply/onlineapplication.htm> This form should be completed and returned electronically. Sealed official transcripts, curriculum vitae, and three letters of reference should follow by mail. In addition students applying to Experimental Oncology or to the General program are required to submit a short “vision statement” indicating why they are interested in doing graduate studies in the Department of Oncology. Complete applications will be reviewed at the next meeting of the appropriate GCC, at which time the GCC will decide whether to recommend to FGSR that the student be admitted.

3. FINANCIAL ASSISTANCE

The Department does not admit prospective students unless financial support (departmental studentships, trust funds, or extramural funding) is available. Prospective supervisors will assist the student in securing funds through application to internal and external agencies, or may provide support from their research funding. Students who are progressing satisfactorily can therefore expect to receive a graduate student stipend for the normal tenure of their program.

The minimum (basic) annual stipend for graduate students in the specialization of Experimental Oncology is \$24,000 (2010-2011). Students are responsible for paying their tuition. Students may be able to obtain a higher stipend by applying for internal and external studentships. The minimum (basic) annual stipend for graduate students with a major award is \$26,000 (2010-2011).

Students who are working full-time towards their graduate degree and who are in good standing with the Department will receive the departmentally-recommended stipend for a maximum of four years (for students registered in the MSc program) or six years (for students registered in the PhD program). Funding for additional years will be dealt with on a case-by-case basis.

Students, who take full-time employment prior to completing their degree requirements, even if maintaining their registration in the Department of Oncology graduate program, are not eligible to receive a stipend.

Students, who take part-time employment prior to completing their degree requirements, even if maintaining their registration in the Department of Oncology graduate program, will be dealt with on a case-by-case basis.

Information regarding graduate studentships awarded through the University of Alberta is available at <http://www.gradstudies.ualberta.ca/awardsfunding/>. Information regarding graduate studentships awarded through the Department of Oncology is available at <http://www.graduate-studies-in-cancer-research.org/awards.html?submenuheader=0>. The Department of Oncology internal awards include: the Endowed Graduate Studentship in Oncology which consists of an annual stipend (\$20,000 plus tuition) and a research allowance (\$1,500) for two years (recruitment award). Information regarding studentships awarded by external agencies such as the Alberta Heritage Foundation for Medical Research (<http://www.ahfmr.ab.ca>), Canadian Institutes of Health Research (<http://www.cihr-irsc.gc.ca/e/193.html>), National Cancer Institute of Canada (<http://www.ncic.cancer.ca>), Natural Science and Engineering Research Council (<http://www.nserc-crsng.gc.ca/>), Alberta Cancer Research Institute (<http://www.cancerboard.ab.ca/Research/ACRI/>), Alberta Health Services (<http://www.albertahealthservices.ca/>) and others, is available through their respective websites.

3.1 Dr. Herbert Meltzer Memorial Tuition Fellowship

Graduate students in the Ph.D. program are eligible for the Meltzer Memorial Tuition Fellowship. The Meltzer Memorial Fellowship will support tuition fees for a student for two successive academic terms (one year), pending availability of funds. These awards will be made once the student has completed the Ph.D. Candidacy Exam, with a yearly cut-off of September 1. For example, if a student passes the candidacy exam before September 1, the Department will pay the student's tuition for the next 2 terms, i.e. September and January. If the student passes the exam after September 1, the Department will pay their tuition for September and January of the following year. The following restrictions apply: (i) the student must have fulfilled all department requirements, (ii) the student's total awards (including tuition awards) must be less than \$35,000.

3.2 Elizabeth Tucker Travel Award

The Department will provide up to \$1500 to help defray the costs associated with a Ph.D. student attending a high caliber international meeting in the student's field of research. The award will be made based on: (i) excellence of the student, (ii) seniority of the student and (iii) financial need. Students will have to demonstrate that they will be giving either an oral presentation or a poster presentation at the meeting. Preference will be given to students who have had limited

opportunities to attend meetings outside Canada. A student is eligible for only one Elizabeth Tucker Travel Award during their program.

Students are encouraged to apply as soon as they have received notice that they will be presenting at a meeting. Students who already hold a travel allowance or have access to travel awards through agencies such as CIHR and AHFMR are not eligible for this award. An application and letter of support from the supervisor is required. Supervisors should provide a letter of support indicating that they have limited funds for traveling.

3.3 Professional Development Funds

Each graduate student is eligible to apply for up to \$200 (pending availability of funds) in professional development courses and/or workshops. An application form is available on the department website.

3.4 Policies and guidelines regarding research allowances awarded to Department of Oncology graduate students

Some granting agencies provide a research allowance to graduate students. All expenditures by the student from these allowances must be approved in advance by the supervisor or, where guidance is required as to the suitability of specific expenditures, by the appropriate GCC. Allowable items must relate directly to the students' research and would include books, journals, periodicals, travel, etc. Items that are normally associated with entertainment should not be purchased through a research allowance, even if these items have additional functions that can be used in a research setting. Proper documentation of items purchased must be provided with the expense claim.

(N.B. If these policies disagree with the official policies of the granting agency, the latter will hold)

4. GRADUATE DEGREES IN ONCOLOGY

The Department of Oncology offers thesis-based M.Sc. and Ph.D. degrees. Students entering the program are registered as M.Sc. or as Ph.D. degree students. Course work will normally be at an advanced level (ie 500 to 600 level). In addition to courses each candidate must prepare and defend a thesis describing the results of his/her research program.

4.1 The Degree of M.Sc.

Admission to the M.Sc. program in the Department of Oncology is contingent upon approval of the application by the GCC and the FGSR. Students must maintain a GPA of at least 6.5/9 or 2.7/4 (B-) in order to remain in the M.Sc. program and must obtain a pass grade [6.0/9 or 2.3/4 (C+)] in each graduate course completed. The minimum course complement is 3 approved graduate level courses (9 course weights). The course requirements vary between the specializations and are determined by the appropriate GCC.

For the specialization of Experimental Oncology, the course requirements include Oncology 520 and Oncology 660/661 and are described at <http://www.graduate-studies-in-cancer-research.org/courses.html>

For the specialization in Medical Physics, the course requirements are detailed below and at http://www.mp.med.ualberta.ca/graduate_prog/courses.htm?submenuheader=1.

For the General Program, coursework will include content that is related to the topic of thesis research and will be determined by the supervisor and supervisory committee through consultation with the General Program GCC (GPGCC).

A Department of Oncology Curriculum Committee has been struck and is charged with the task of identifying suitable courses, developing additional courses, and building them into modules to meet the diverse needs of the General Program. Current members of the committee include the Chair Dr. Sandy McEwan and Dr. Vickie Baracos. The committee will make recommendations to the GPGCC.

In addition to courses, the M.Sc. candidate must prepare and defend a thesis describing the results of his/her research program. The student will be examined orally on the contents of the thesis by a committee formed according to FGSR regulations. All graduate students must complete a course or courses in academic integrity and ethics (refer to Section 6). A student will not be allowed to graduate unless he/she has fulfilled this University requirement.

4.2 Time-line for the M.Sc. degree

The minimum residency requirement for the M.Sc. degree in Oncology is one year. The M.Sc. program will usually take two-three years to complete. The University imposes time limits on the period of graduate training. For a M.Sc. degree, the time limit is four years. Extensions may be granted by the FGSR under extenuating circumstances. MD's and other health professionals registered in the program are frequently required to spend a portion of their time in clinical activity; however, at least 80% should be devoted to academic research. The time spent in clinical activity cannot count for time spent on the degree.

4.3 Change of status from M.Sc. to Ph.D. degree candidate

Students enrolled in the M.Sc. program can, after one or two years of satisfactory progress, request a transfer to the status of Ph.D. degree student. Students who are performing well in their research and their course work, and who wish to transfer to the Ph.D. program, are encouraged to do so within their first two years. Students who transfer in their first year may then qualify for University of Alberta Ph.D. scholarships which are available only to students in their first two years of a Ph.D. program.

To transfer to the Ph.D. program, students must obtain the approval of their supervisor and supervisory committee. For students registered in Experimental Oncology, approval is based on progress in their M.Sc. research project and potential to expand the scope of their research project based on a Ph.D. proposal. The Ph.D. proposal must be approved by both the supervisory committee and EOGCC (Section 8.4). For students registered in Medical Physics, approval is based on: (i) academic record, completion of required courses, progress in their M.Sc. research project and potential to expand the scope of their research project. The Associate Chair Graduate Studies will monitor the process. All members of the supervisory committee must approve the transfer to the Ph.D. degree by signing "Section 3" of the "Supervisory Committee Report" found at X:/everyone/Supervisory Committee Meeting Report.

Transfer to the Ph.D. degree will be initiated by the Department of Oncology graduate office once the supervisor, supervisory committee and appropriate GCC have approved the Ph.D. proposal.

Years of residency as a M.Sc. student will be applied to the Ph.D. program when transferring from the M.Sc. to the Ph.D. program. Credit for courses taken will be transferred to the Ph.D. program on the recommendation of the supervisor and of the supervisory committee.

4.4 The Degree of Ph.D.

Admission to the Ph.D. program in the Department of Oncology is contingent upon approval of the application by the appropriate GCC and by the FGSR. The requirements for the General Program and for the Specializations are determined by the appropriate GCC.

Ph.D. students in Experimental Oncology must obtain a pass grade [2.3/4; (C+)] or better in each of a minimum of four approved graduate level courses (12 course weights) which must include Oncology 520 and Oncology 660/661. To remain enrolled in the Ph.D. program students must maintain a GPA of at least 2.7/4, or (B-). In addition to the 12 course weights, students registered in the Ph.D. program must give one seminar each year through Oncology 660 (as detailed in Section 7.2 - Course Requirements). A list of approved graduate level courses for Experimental Oncology is available at <http://www.graduate-studies-in-cancer-research.org/courses.html?submenuheader=0> This list includes all the courses that have been approved to date by the EOGCC. Undergraduate courses may be substituted for graduate level courses on a case-by-case basis when recommended by the supervisory committee and approved by the EOGCC. The supervisor should advise the GCC of the reasons for substitution, such as a need to study an unfamiliar area of knowledge relevant to the research project. For Ph.D. students who already hold a M.Sc. degree in the same or related field, the minimum course requirement is six course weights in graduate courses and must include Oncology 520 and Oncology 660/661 (unless these courses have previously been taken as a M.Sc. student). Substitutions for Oncology 520 will not be allowed unless the student can demonstrate that they have taken an equivalent course for credit in the last two years. Ph.D. students with a M.Sc. degree must give a seminar every year through Oncology 660 whether or not they are taking the course for credit.

Ph.D. students in the specialization of Medical Physics must obtain a passing grade of at least C+ in each of the approved graduate level courses. Students must maintain a GPA of B- in order to remain in the program. The course requirements are listed at http://www.mp.med.ualberta.ca/graduate_prog/courses.htm?submenuheader=1 To qualify for a Ph.D. in the General Program requires a pass grade of at least 2.3/4 or C+ in each of four approved graduate level courses. Students must maintain a cumulative GPA of B+ or 2.7/4 to remain in the program. The course requirements will be determined on an individual basis through consultation of the supervisor with the GPGCC.

Students registered in Experimental Oncology must submit a Ph.D. proposal delineating their proposed research to their supervisory committee prior to taking the Ph.D. candidacy examination. The Ph.D. proposal will be evaluated by the supervisory committee for scope and breadth as described in Section 8.4. Ph.D. students must pass an oral candidacy examination in order to become Ph.D. Candidate (Sections 8.5-8.10). Normally the candidacy examination is scheduled after the completion of coursework and must be scheduled prior to the end of the three-year term. A Ph.D. student must pass their candidacy examination at least six months before the final oral thesis defense.

Ph.D. candidates must prepare and defend a thesis describing the results of the candidate's research project. The student will be examined orally on the contents of the thesis by a thesis defense committee formed according to FGSR regulations (Sections 8.15-8.19).

All graduate students at the University of Alberta are required to take course(s) in academic integrity and ethics (Section 6). A student will not be allowed to graduate unless he/she has fulfilled this University requirement.

Students are expected to prepare manuscripts on their research and submit them to scientific journals. Although not a formal program requirement, the goal of every Ph.D. student should be to obtain three first-authored publications in good quality journals. Reaching this goal will ensure that the student is competitive for postdoctoral fellowship awards and postdoctoral positions, and has more choices with regards to job opportunities and/or career paths. Although not every student will meet this goal, the Department requires that a PhD candidate have at least one first-authored manuscript under revision by a peer-reviewed journal before the Department will accept this PhD thesis for examination. The manuscript must be relevant to the subject matter of the thesis.

4.5 Time-line for the Ph.D. degree

The minimum residency requirement for a Ph.D. degree in Oncology is two academic years of full time attendance. The Ph.D. program will usually take four-six years to complete. However, the length of the Ph.D. program is necessarily dependent upon the progress achieved within the research project. It is to the advantage of Ph.D. students who experience difficulty making progress in their project to inform the Graduate Coordinator of their concerns early so that supportive action can be implemented. The University imposes time limits on the period of graduate training. For a Ph.D. degree, the time limit is six years from the time the student first registers in the program as M.Sc. or Ph.D. Candidate. Extensions can be obtained from the FGSR by written request under extenuating circumstances.

5. THE SUPERVISOR/SUPERVISORY COMMITTEE

5.1 Choosing a supervisor

Students must normally identify a prospective supervisor(s) willing to pay their stipend prior to admission. It is a condition of admission that at least one staff member be willing to make a commitment on their behalf. Supervisors will be asked to indicate their commitment (both academic and financial) to the student in the form of a letter addressed to the Chair of the GCC.

5.2 Criteria for supervision

It is the responsibility of the GCC to ensure the quality of graduate level supervision including observance of the following Guidelines for the Qualification of Supervisors.

Prospective supervisors must have an appointment within the Department of Oncology and

1. Be currently active in research
2. Have adequate time to supervise the student
3. Have sufficient peer-reviewed research funding for the proposed project
4. Have the space and time to accommodate the number of students proposed
5. Hold a degree that is equivalent or higher than that for which the student is a candidate. Individuals with M.D. degrees may supervise Ph.D. students under exceptional circumstances at the discretion of the GCC and Department Chair.

Supervisors should not normally take on more than three graduate students until they have successfully graduated a student from the University of Alberta.

5.3 Selecting a supervisory committee

Once a student chooses a laboratory to work in, and a research project is decided upon, a supervisory committee will be struck. Selection of a supervisory committee must occur within the first year, and preferably soon after the student has settled into a defined project. **The supervisory committee will consist of the supervisor, and at least two other members of the University academic staff.** At least one member of the supervisory committee, in addition to the supervisor, must hold a Ph.D. in a basic science discipline. Once the supervisory committee has been selected, the *Approval of Supervisor/Supervisory Committee* form will be filled out by the Graduate Program Administrator, and following approval by the GCC, forwarded to FGSR. The composition of the committee is decided jointly by the supervisor and the student. In addition to forming the nucleus of the examining committees for the candidacy examination (in the case of Ph.D. students) and for the thesis examination (in the case of both the Ph.D. and M.Sc. degrees) the committee is charged with monitoring the student's progress in their research program. The supervisory committee makes decisions on the choice of course work, and other matters pertaining to the timing of the candidacy and final thesis examinations.

5.4 Supervisory committee meeting requirements

Each supervisory committee must meet at least once a year, but students may request more frequent meetings if they think it necessary. Meetings are not examinations, and students are usually present throughout the whole meeting. The purpose of the supervisory committee is to assist the student by providing collective advice, as well as helping with decisions to be made in the research project and intended study path. To prepare for the supervisory meeting, the student will write an annual progress report (3 to 5 double-spaced pages) summarizing their work, their accomplishments over the previous year and proposed research for the next year. The report should also include lists of any awards, publications or abstracts and any other information deemed to be of interest to the supervisory committee. The report must be distributed to the members of the supervisory committee at least one day in advance of the meeting.

M.Sc. students who are seeking elevation to the Ph.D. (normally in the first or second year), as well as Ph.D. students in their first or second year, must write a Ph.D. proposal which should include a progress report as described above. The Ph.D. proposal will be evaluated by the supervisor committee for breadth, scope, feasibility and suitability. Progress reports and/or Ph.D. proposals should be appended to the Supervisory Committee reports (described below).

It is the responsibility of the supervisor to set a date for the supervisory committee meeting in consultation with the student and other members of the committee and to book the room for the meeting. The student is responsible for booking the AV equipment.

5.5 Supervisory Committee reports

To assist in monitoring student progress a departmental *Supervisory Committee Report* signed by the committee members and the student must be filed with the Graduate Program Administrator

after each meeting of the supervisory committee. A blank copy of the report is available at: [X drive/everyone/supervisory committee meeting report](#). The original report, minutes of the meeting, and a copy of the student's progress report and/or Ph.D. proposal, must be forwarded to the office of the Graduate Program Administrator as soon as possible after the supervisory meeting. A copy of the report will be kept in the student's file and brought to the attention of the GCC if problems are flagged. The supervisor of a student whose committee has not met for over a year will receive an official reminder from the GCC. This will be followed by an official reminder from the Department Chair if necessary.

5.6 Student-supervisor conflicts

The relationship between a graduate student and supervisor represents a long-term commitment on both sides. Occasionally, problems will arise between a student and supervisor, which, if left unresolved, may severely jeopardize the student's chance of completing a graduate degree. **A student encountering problems which cannot be resolved through discussion with the supervisor should immediately consult the Graduate Coordinator before taking any other action.** The Graduate Coordinator, Division Director, and Associate Chair of Graduate Studies may meet with the supervisor and members of the supervisory committee to discuss the problem further. Courses of action include suggestions for changes to the composition of the supervisory committee, transfer of the student to another supervisor within the Department, or transfer of the student to another University Department. In cases where the conflict cannot be resolved to the student's satisfaction, the student may be asked to withdraw from the program without prejudice. Should the student-supervisor relationship become disrupted, the appropriate GCC will act as the student's interim supervisor.

6.0 Academic Integrity and Ethics Training

All students registered in Oncology must complete eight hours of training in academic integrity and ethics. Fundamental ethics concepts to be addressed include research and scholarly integrity, intellectual property, conflict of interest, supervisor/student conflicts, human research ethics and animal research ethics. Training in academic integrity and ethics can be partially fulfilled by participating in the *Ethics and Scientific Integrity Day* held by the Faculty of Medicine and Dentistry each year. This component will count towards five hours of training in academic integrity and ethics. The remaining three hours will be through departmental/institutional seminars. Additional components may be required if the student is involved in animal and/or human research. Students involved in animal research must participate in the University of Alberta workshop on *The Care and Use of Animals in Research, Teaching and Testing*. Each student should provide the Graduate Program Administrator with a photocopy of the Ethics and Scientific Integrity Day certificate, or other relevant certificates or documentation, so that these can be included in the student's file. This training component of the graduate program is mandatory and must be fulfilled prior to the Ph.D. Candidacy Exam or prior to the M.Sc. Thesis Defense.

7.0 THE MEDICAL PHYSICS GRADUATE PROGRAM

7.1 The Medical Physics M.Sc. Program

M.Sc. Program in Medical Physics					
New Medical Physics graduate students begin their studies in September. In their first year, M.Sc. students take 11 didactic courses and 2 laboratory courses.					
First Term (Fall)			Elective Courses	Time Limit for Completion ¹	Minimum Grade Point Average
Required Course	Credits	Name of Required Course			
ONCOL 550	3	Medical Radiation Physics			
ONCOL 558	2	Health Physics			
ONCOL 560	2	Technology in Radiation Oncology			
ONCOL 562	3	Theory of Medical Imaging			
ONCOL 566	3	Radiation Biophysics			
ONCOL 600	1	Graduate Medical Physics Seminar			
Second Term (Winter)					
BME 564	3	Fundamentals of Magnetic Resonance Imaging, MRI			
ONCOL 552	3	Fundamentals of Applied Dosimetry			
ONCOL 564	3	Physics of Nuclear Medicine			
ONCOL 568	3	Physics of Diagnostic Radiology			
ONCOL 600	1	Graduate Medical Physics Seminar			
Spring Session					
ONCOL 554	2	Laboratory in Medical Radiation Physics			
ONCOL 556	2	Laboratory in Imaging			
In addition to the courses required, each student must complete an M.Sc. thesis ³ focusing on Radiation Oncology Physics or Diagnostic Imaging Physics,					

In Medical Physics each student chooses a research supervisor by May of his/her first year. By July of their first year, a supervisory committee should be appointed for each student. By the end of the first year of the program and each year thereafter, the supervisory committee must meet with the student and make a formal recommendation on the candidate's potential for or progress in graduate work. The results of the student's research project must be presented in a thesis and defended in a final oral examination by an examining committee.

¹ S 193.14 2006-07 University of Alberta Calendar

² U of A General Faculties Council Policy Manual

(http://www.uofaweb.ualberta.ca/gfcpolicymanual/content.cfm?ID_page=37734#38613)

³ See 193.11 Thesis Requirement, 193.12 Oral Examination, 193.13 Convocation 2006-07 University of Alberta Calendar

7.2 The Medical Physics Ph.D. program

PhD Program in Medical Physics					
New Medical Physics graduate students begin their studies in September. In their first year, new PhD students take all 11 didactic courses and 2 laboratory courses (if not already taken in their M.Sc.) required for M.Sc., plus 2 elective courses.					
First Term (Fall)			Elective Courses	Time Limit for Completion ⁴	Minimum Grade Point Average (FGSR)
Required Course	Credits	Name of Required Course			
ONCOL 550	3	Medical Radiation Physics			
ONCOL 558	2	Health Physics			
ONCOL 560	2	Technology in Radiation Oncology			
ONCOL 562	3	Theory of Medical Imaging			
ONCOL 566	3	Radiation Biophysics			
ONCOL 600	1	Graduate Medical Physics Seminar			
Second Term (Winter)					
BME 564	3	Fundamentals of Magnetic Resonance Imaging, MRI			
ONCOL 552	3	Fundamentals of Applied Dosimetry			
ONCOL 564	3	Physics of Nuclear Medicine			
ONCOL 568	3	Physics of Diagnostic Radiology			
ONCOL 600	1	Graduate Medical Physics Seminar			
Spring Session					
ONCOL 554	2	Laboratory in Medical Radiation Physics			
ONCOL 556	2	Laboratory in Imaging			
ELECTIVE COURSES <i>Fall Term Ph.D. Elective Courses</i> PHYS 511 – Advanced Quantum Mechanics 1 – 3 credits ONCOL 690 – Biomedical Magnetic Resonance Methods and Applications – 3 credits <i>Winter Term Ph.D. Elective Courses</i> ONCOL 691 – Advanced Magnetic Resonance Physics, 1 credit ONCOL 692 – Advanced Radiological and Nuclear Imaging Physics – 3 credits ONCOL 693 – Advanced Radiotherapeutic Physics – 3 credits			If not already taken (e.g., in M.Sc.), all courses for M.Sc. or their equivalent plus 2 elective courses	6 years from initial registration in the Program	All students in degree programs (including time spent as a qualifying graduate student) must maintain a minimum cumulative grade point average of 2.7 throughout the course of the program. ⁵
In addition to the courses required, each PhD student must pass an oral candidacy examination and complete a PhD thesis ⁶ focusing on the MP, DP or RP area.					

⁴ S 193.14 2006-07 University of Alberta Calendar

⁵ U of A General Faculties Council Policy Manual

(http://www.uofaweb.ualberta.ca/gfcpolicymanual/content.cfm?ID_page=37734#38613)

⁶ See 193.11 Thesis Requirement, 193.12 Oral Examination, 193.13 Convocation 2006-07 University of Alberta Calendar

In Medical Physics each student chooses a research supervisor by May of his/her first year. By July of their first year, a supervisory committee should be appointed for each student. By the end of the first year of the program and each year thereafter, the supervisory committee must meet with the student and make a formal recommendation on the candidate's potential or progress in a PhD program.

When most of the course requirements are completed and the PhD thesis project is well defined, a PhD student must pass an oral candidacy examination in subjects relevant to his/her general field of research.

Each doctoral student must plan and carry out original high quality research leading to an advance in knowledge in the candidate's field of study. The results of this research must be presented in a doctoral thesis that is reviewed and defended in a final oral examination by an examining committee.

8.0 THE EXPERIMENTAL ONCOLOGY GRADUATE PROGRAM

8.1 Role of the Experimental Oncology Graduate Coordinating Committee (EOGCC)

The role of the EOGCC is to regulate admissions to the departmental graduate program and to oversee the quality of that program. Its specific mandate is to uphold standards of academic excellence within the program by effectively monitoring individual student progress, by ensuring observance of the policies of the University and the FGSR, and by resolving conflicts which might arise between students and their supervisors. To this end the EOGCC will:

1. Ensure that student supervisory committees are struck within one year of commencing the graduate program.
2. Ensure that each supervisory committee meets at least once a year, and submits a report of that meeting to the EOGCC.
3. Review the academic and research performance of each graduate student annually through evaluation of the reports of the supervisory committees at the May or June meeting of the EOGCC.
4. Make recommendations, in consultation with the supervisor, for the appropriate action in the event that a student fails a course or courses.
5. Make suggestions to the supervisor regarding changes in the status of a student.
6. Act as the interim supervisor for rotational students, and for students who are without a supervisor.
7. Review the membership of supervisory committees, PhD Candidacy Examination committees, M.Sc. and Ph.D. thesis committees.

8.2 Experimental Oncology: Course requirements

Selection of graduate student courses is done in consultation with the supervisor and the Supervisory Committee. Additional courses may be assigned or recommended by the EOGCC based upon the background of the student and the area of specialization undertaken.

The following **course requirements** must be observed by all Experimental Oncology graduate students:

1. All EO graduate students are required to take Oncology 520 (Tumour Biology) for credit. Oncology 520 is a 3-credit course offered in the winter term of alternate years.
2. All EO graduate students are required to take Oncology 660/661 (Current Topics in Cancer Research) for credit. Oncology 661 is a one-credit Fall term course. Oncology 660 is a two-credit Winter term course. Students would normally take Oncology 660/661 for credit in the second year of their program. Course substitution may be allowed in the case of students specializing in programs other than Experimental Oncology. Requests for course substitution will be made by the supervisor and assessed by the GCC.
3. To develop their oral presentation skills, EO Ph.D. students are required to give one formal seminar (normally through Oncology 660) every year. First year students will normally be exempt from this requirement.
4. EO graduate students are expected to attend all Oncology 660/661 research seminars whether or not they are enrolled in Oncology 660/661.

The list of approved courses for either the M.Sc. or Ph.D. degree in Oncology is listed under <http://www.graduate-studies-in-cancer-research.org/courses.html?submenuheader=0> If a student is interested in taking a course that is not listed, he/she must first obtain approval from the supervisory committee. The supervisor should then contact the GCC for course approval.

8.3 Experimental Oncology: Laboratory rotations

Students entering Experimental Oncology may opt to rotate through the laboratories of up to three eligible academic staff before deciding whom to choose as their supervisor. The purpose of the rotation is to familiarize the student with the various areas of research and expertise within the Department and to optimize student/project compatibility. The act of rotation constitutes an act of good faith on the part of both the student and the potential supervisor and is not a binding contract. The final pairing of students and supervisors will, therefore, be agreed upon in a manner that is mutually acceptable to both parties and to other potential supervisors. During the rotation period the GCC will serve as the student's interim supervisor and at the end of the rotation will administer student-supervisor pairing. Each rotation will be one month in length and will run from Sept 1 to 30, Oct 1 to 31, and Nov 1 to 30, or from Jan 1 to 31, Feb 1 to 28/29, and March 1 to 31. In each rotation the students will be expected to learn something about the techniques being used in the laboratory, to familiarize themselves with ongoing research projects, and to discuss prospective graduate student projects with their rotation supervisor. Students who choose to rotate should first obtain the *Graduate Student Rotation* form from the Graduate Program Administrator. It is a departmental requirement that each supervisor indicate his or her willingness to supervise the student for a given period by signing the Rotation Form prior to the rotation.

Upon completion of laboratory rotations, the student, in consultation with rotation supervisors, will choose a laboratory in which to carry out the research project. The student will inform the

Chair of the EOGCC of his or her decision. The Chair of the EOGCC will inform the other rotation supervisors and the Graduate Program Administrator of the student's decision.

8.4 Experimental Oncology: The Ph.D. proposal

Students registered in the Ph.D. program, and M.Sc. students wishing to transfer to the Ph.D. program, must submit a Ph.D. proposal to their supervisory committee and to the Experimental Oncology Graduate Coordinating Committee (EOGCC) usually within 12-30 months of registering in the graduate program.

The Ph.D. proposal must be written by the student and should clearly delineate the role of the student and the scope of the project. Input from the supervisor and supervisory committee is encouraged. As a general guideline, the Ph.D. proposal should include 1-2 pages Introduction, 1-2 pages Progress Report, and 3-5 pages of Proposed Experiments including hypothesis, objectives, description of experiments and summary statement describing the importance of the proposed work. Appendices should be restricted to figures, references, questionnaires and tables. The student's *Curriculum Vitae* including publications, abstracts, presentations, awards, membership on committees, etc. must also be appended to the Ph.D. proposal.

The Ph.D. proposal must be submitted to the supervisory committee at least one week prior to the scheduled supervisory committee meeting. The supervisory committee will provide input to the student during the supervisory committee meeting and make a recommendation to either approve or reject the Ph.D. proposal. If the Ph.D. proposal is not approved, sufficient details must be provided to the student and supervisor to facilitate re-submission of an acceptable proposal. Once the proposal has been approved by the supervisory committee, each supervisory committee member will sign Section 3 of the *Supervisory Committee Report*. The supervisor will then submit the following documents to the EOGCC: (i) Ph.D. proposal including *Supervisory Committee Report*, (ii) minutes of the supervisory committee meeting(s) at which the Ph.D. proposal was discussed/accepted, and (iii) student *Curriculum Vitae*. Ph.D. proposals and supervisory committee membership will be evaluated by the EOGCC and feedback provided to the student and supervisor. Note that the EOGCC's main role in the evaluation of the Ph.D. proposal is to ensure that departmental standards are maintained. If the Ph.D. proposal fails to meet departmental standards, the Associate Chair will meet with the student, supervisor and/or supervisory committee, as required.

For students already in the Ph.D. program, approval of the Ph.D. proposal means that the student is allowed to proceed to the Ph.D. candidacy examination. For students in the M.Sc. program, approval of the Ph.D. proposal means that the students become Ph.D. candidates and can proceed to the Ph.D. candidacy examination. Once approval to transfer to the Ph.D. degree has been obtained from the supervisory committee, EOGCC and Associate Chair, the Graduate Program Administrator will submit a *Change of Category* form to the FGSR for official approval.

8.5 Experimental Oncology: the Ph.D. Candidacy Examination

The FGSR requires that all students registered in the Ph.D. program take an oral Ph.D. candidacy examination. For students in the specialization of Experimental Oncology the candidacy exam requires preparation of a written document in the form of a research grant proposal which the student defends orally before the Ph.D. Candidacy Examination Committee. The grant proposal

may be on a topic that is related to the student's field of research but should not overlap substantially with their Ph.D. proposal. The Ph.D. candidacy grant proposal may be based on work that the student is currently doing; however, this work should serve only as the starting point for the development of new ideas and approaches. As an example, the first objective of the grant proposal may be directly related to the Ph.D. proposal, with objectives 2 and 3 taking the project in new directions. The expectation is that the student will write the proposal on novel and innovative aspects of their research that are independent of their supervisor.

Students registered in Experimental Oncology are required to take the Ph.D. candidacy examination within 24-36 months of joining the graduate program as either M.Sc. or Ph.D. students. Extensions will be granted only under exceptional circumstances. To obtain an extension, both the student and supervisor should write a letter to the EOGCC explaining the reasons for the delay in taking the Ph.D. candidacy examination. Students who fail to meet the deadline for the Ph.D. candidacy examination will be requested to transfer to the M.Sc. degree.

8.6 Experimental Oncology: Preparing for the Ph.D. candidacy exam

Students who are ready to take their candidacy exam should obtain the *Guidelines for the Ph.D. Candidacy Exam* from the Graduate Program Administrator or from <http://www.graduate-studies-in-cancer-research.org/currentstudent.html?submenuheader=0>. These guidelines should be carefully read by both the student and the supervisor. The student should meet with his/her supervisor and supervisory committee at least 8-12 weeks prior to the projected Ph.D. candidacy exam date in order to discuss: (i) the intended date of the candidacy exam and (ii) the hypothesis, objectives and approaches of the grant proposal. The latter should be provided to the supervisory committee in the form of a written outline. The supervisor/supervisory committee can provide general input into the grant proposal, keeping in mind that the purpose of the exercise is to encourage the student develop their own ideas and approaches within the context of their research field. Once a suitable approach and/or topic have been chosen, the student will spend ~4 weeks writing the grant proposal. Please note that once the supervisory committee has approved the Ph.D. Candidacy Examination topic, there should be no further contact with the supervisor, supervisory committee, candidacy examination committee or Department of Oncology faculty regarding the grant proposal. However students are encouraged to seek input from other students and post-doctoral fellows. Mock examinations with other students and post-doctoral fellows are also encouraged. Also note that previously approved candidacy grant proposals are kept on file in the Graduate Administrator Office. Students are advised to read a few of these grant proposals prior to writing their own grant proposal.

The Graduate Program Administrator must be provided with the following three items at least six weeks before the exam date:

- (i) A copy of the "*Guidelines for the Ph.D. Candidacy Exam*" form signed by the student and supervisor.
- (ii) A copy of the "*Supervisory Committee Approval of Ph.D. Candidacy Exam Topic*" form signed by each member of the supervisory committee. The title of the Ph.D. candidacy grant proposal, the Ph.D. Candidacy Examination date, and the date on which the proposal will be handed to the members and chair Ph.D. Candidacy Exam Committee must be indicated. This form is included in the "*Guidelines for the Ph.D. Candidacy Exam*".

- (iii) A copy of the "*Approval of the Two Faculty Members to be Added to the Ph.D. Candidacy Exam Committee*" indicating the names of the two examiners and their fields of expertise. The fields of expertise of the two additional members must be appropriate for the examination topic. This form is included in the "*Guidelines for the Ph.D. Candidacy Exam*".

Items (i) and (ii) will be kept on record. Item (iii) will be reviewed by the Graduate Coordinator and/or EOGCC to ensure that the Ph.D. Candidacy Examination Committee has sufficient expertise in the student's field of research and with Ph.D. candidacy examinations in general. Once the examination committee has been approved the Graduate Program Administrator will fill out the *Notice and Approval of Doctoral Candidacy Examining Committee* form and submit it to the FGSR for final approval.

Copies of the proposal must be handed in to the Ph.D. Candidacy Examining Committee, including the Chair of the Committee, **at least two weeks before the examination**. Failure to hand in the grant proposal on time, in the absence of exceptional circumstances, will result in the candidacy exam being cancelled at the discretion of the EOGCC. The candidacy exam will then have to be re-scheduled with a **different topic** for the grant proposal.

8.7 Experimental Oncology: The Ph.D. Candidacy Examination Committee

The composition of the examining committee is that of the supervisory committee (supervisor plus at least two additional members) plus two academic members of the University. At least one member of the Ph.D. Candidacy Examination Committee must be from outside the Department of Oncology. The candidacy exam is chaired by the Graduate Coordinator or designate. The role of the Chair is to serve as guardian of the process; the Chair of the examination committee may participate in discussions related to examination outcome, but only as a non-voting member. The student's supervisor is a voting member of the examination committee. The Chair of the Department may participate in the exam as a non-voting member.

8.8 Experimental Oncology: The Ph.D. candidacy grant proposal

The candidacy exam grant proposal is similar in nature to that submitted to a granting agency such as the CIHR. The grant proposal may be up to 11 pages long with single spacing and 1" margins, to which should be appended references, explanatory diagrams and figures which do not count against the page limit. The proposed research should be capable of being accomplished by three people over three years.

In addition to the 11-page proposal, the student must write a **one-page abstract** that includes a brief summary of background, hypotheses, and objectives. Objectives should include approaches and methodology.

Writing a successful proposal on a scientifically relevant question is a difficult and challenging endeavor. The essential background of the scientific problem should be summarized in a few pages. The description of the proposed work should occupy about 60% of the proposal. General statements about relevance should be restricted to one succinct introductory paragraph and another at the end. Most importantly, the student should pose the specific questions to be answered, provide a clear rationale for the scientific approach to be taken, provide a description

of the techniques and controls to be employed, and discuss the interpretations which might be drawn. A brief discussion of the limitations and pitfalls of the approach should also be included. Students are encouraged to visit the CIHR website or other similar websites to obtain general information on how a grant proposal should be written.

8.9 Experimental Oncology: Conducting the Ph.D. candidacy examination

At the beginning of the examination, the Chair of the Ph.D. candidacy examining committee explains to the student and the committee how the exam will be run. The candidate is asked to leave the room and the committee discusses the student's academic progress in course work and in their thesis research. The student is then asked to rejoin the committee and the exam begins. The student presents a 20-25 minute summary of the proposal, after which the first round of specific questioning begins (about 20 minutes per examiner). It is usual to offer the student (and examiners) a 5-minute break between rounds of questioning. Questions may be directly related to the proposal, but should additionally test the student's knowledge and understanding of more comprehensive issues. One of the aims of the examination is to determine whether the student is able to identify an important question, come up with plausible hypotheses, and propose viable experiments to test those hypotheses. Equally important aims are to assess the student's overall knowledge of the field and the student's ability to think and to reason.

At the end of the exam, the student leaves the room while the examiners discuss the candidate's defense of the proposal and knowledge of the field. Once a decision has been reached, the student is readmitted and the committee's decision is communicated by the Chair who summarizes the deliberations leading to that decision. If the student passes the candidacy exam, the Graduate Program Administrator will fill out the *Completion of Candidacy Examination* form and submit it to the FGSR. Once the form has been processed by FGSR, the student's transcript will indicate that the student has successfully passed the candidacy examination.

In the event that the oral defense or written proposal is deficient, the student may be asked to fulfill additional requirements before a final decision can be reached. This is called a Conditional Pass. For example, the committee may ask the student to repeat a part of the examination at a later date. If the Ph.D. candidacy examining committee agrees to a Conditional Pass, the Chair of the examining committee must provide in writing the reasons for the recommendation to the Associate Dean of the FGSR, and to the student.

If there are serious flaws with either the written document or the student's performance at the oral exam, the student will fail the examination. If the student's candidacy exam performance or written document was inadequate but the student's performance and work indicate that the student has the potential to perform at the doctoral level, the candidacy exam committee may recommend that the student repeat the examination. The repeat Candidacy Exam is to be scheduled no later than 6 months from the date of the first candidacy exam. Two options will be considered in the event that the student fails the second candidacy exam or the Ph.D. Candidacy Examination Committee does not recommend a repeat of the candidacy exam: change of category to a M.Sc. program or termination of the Ph.D. program. If the Ph.D. Candidacy Examination Committee agrees to a Fail, the Chair of the Ph.D. Candidacy Examination Committee must provide in writing the reasons for the recommendation to the Associate Dean, FGSR, and to the student. For failed exams, the Associate Dean of FGSR, will normally meet

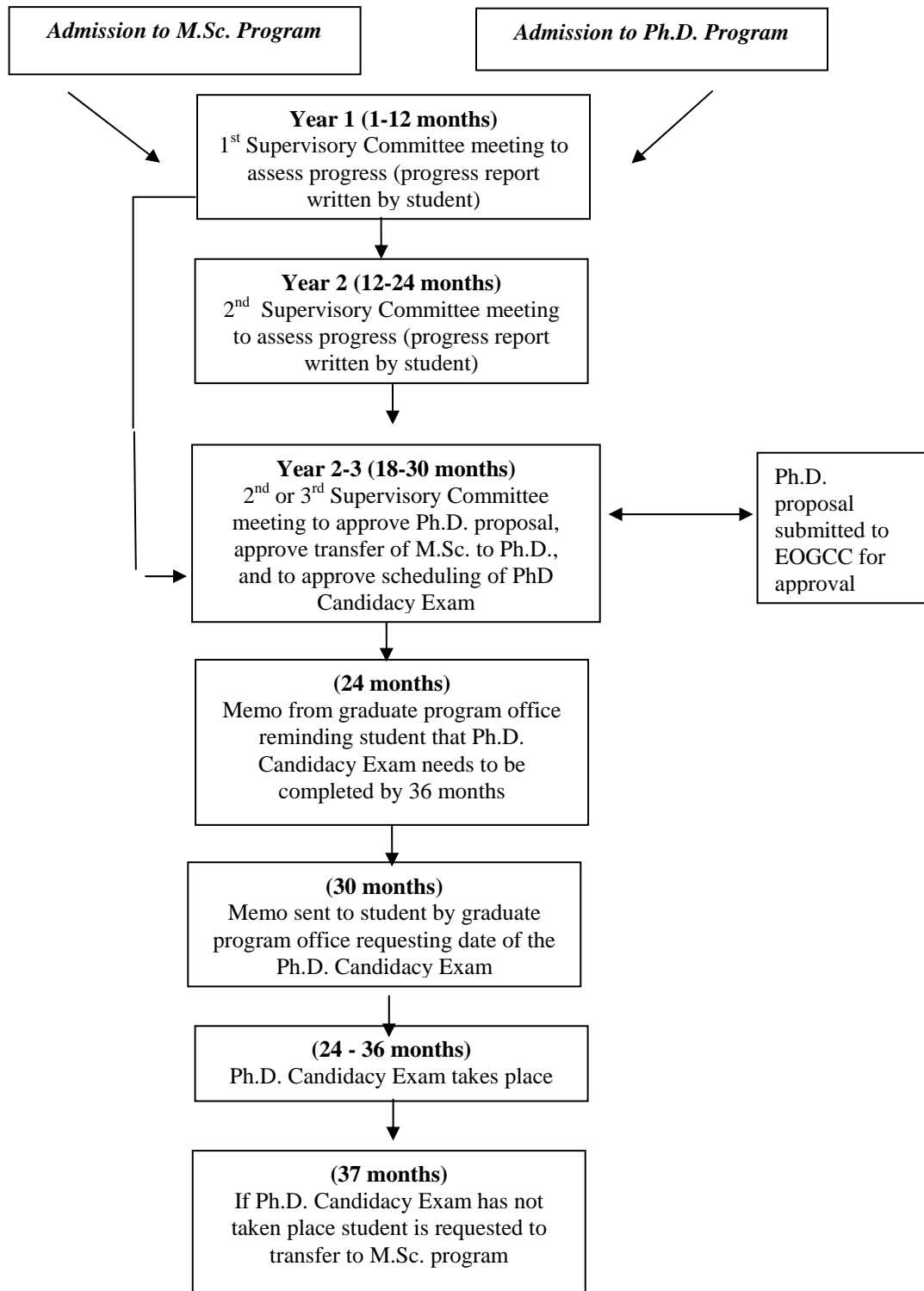
with the student and Department representatives before acting upon any departmental recommendation.

At the end of the candidacy exam, the copy of the grant proposal handed in to the Chair of the Ph.D. candidacy examining committee will be kept on file in the Department of Oncology office. With permission of the student, the grant proposal will be made available to future candidates.

8.10 Experimental Oncology: Extending the Ph.D. candidacy examination beyond 36 months

Students will be required to take the Ph.D. candidacy examination within 24-36 months of entering the graduate program either as a M.Sc. or Ph.D. student. Extensions will be granted only under exceptional circumstances. To obtain an extension, both the student and supervisor need to write a letter to the EOGCC explaining the reasons for the delay in taking the Ph.D. candidacy examination. A likely consequence of failing to meet the deadline for the Ph.D. candidacy examination is transfer to the M.Sc. degree and defense of the M.Sc. thesis before admission to the Ph.D. program.

Experimental Oncology Ph.D. Candidacy Exam Time-Line



8.11 Experimental Oncology: The M.Sc. final exam

There are six steps in preparing and then eventually submitting a thesis to the FGSR in order to complete the graduate degree program. To review the six steps in preparation of a thesis, visit <http://www.gradstudies.ualberta.ca/degreesuperv/thesis/prepare.htm>

8.12 Experimental Oncology: The M.Sc.: Final Exam Committee

M.Sc. final examinations are conducted with a minimum of three examiners, at least one of whom is external to the Department. The Chair of the M.Sc. examination committee (normally the Graduate Coordinator or designate) must be from inside the Department and does not vote. Under exceptional circumstances, the Chair of the M.Sc. examination committee may also serve as an examiner and a voting member. The student's supervisor is a voting member of the examination committee. The Chair of the Department may participate in the exam as a non-voting member.

All members of the examining committee must be in attendance, which includes members participating through teleconferencing. Except for the Dean, FGSR (or Associate Dean), persons other than the examiners may attend only with the approval of the Dean, FGSR, or the Chair of the committee.

Recommended names of the members of the final oral examining committee will be forwarded to FGSR for approval on a "*Notice and Approval of a Master's Final Oral Examining Committee*" form at least three weeks prior to the final oral examination. **A copy of the thesis must be supplied to each examiner at least three weeks prior to the oral examination.**

8.13 Experimental Oncology: Conducting the M.Sc. final oral examination

The Chair will provide a brief description of the examining procedure and establish the order of questioning (from most external to most internal). The student will be asked to leave the room and the student's academic history will be reviewed. The candidate will then be asked to return and give a 20-25 minute presentation. Alternatively, the student may give a seminar to the Department immediately prior to the examination. After the presentation, the oral exam will begin. There will usually be two rounds of questioning (approximately 20 minutes per examiner in the first round, followed by a shorter round). A short break between the two rounds of questioning may be requested by the student or examiners. At the close of the examination, the student is asked whether he/she has any final comments. The student then leaves the room while the examiners discuss the student's performance and quality of thesis. For the adjudication, no final verdict is rendered without each examiner giving an opinion. The student is then readmitted and the committee's decision is communicated by the Chair who briefly summarizes the deliberations leading to that decision. It is useful for the Chair to keep a record of the exam noting time-line, order of questioning, summarizing the opinions of each examiner and the substance of the discussion. This record will be kept in the Department.

The decision of the examining committee will be based on the content of the thesis and on the candidate's ability to defend it. There are four possible outcomes for the M.Sc. final exam:

Pass

Pass subject to revisions
Adjourned
Fail

In March 2009, the FGSR implemented a new Thesis Approval/Program Completion form, replacing signature pages in the thesis. This form is completed by the department and submitted to FGSR. Oncology, in common with many other departments, adheres to the following additional procedures:

Pass: Thesis is approved as is. Examining committee members sign the signature page of the thesis immediately. (If one of the examiners fails the student but the student passes, that examiner does not have to sign the thesis.)

Pass subject to revisions: Members who wish to do so sign immediately. The committee chair or supervisor withholds the signature until the thesis is amended satisfactorily and all other committee members have signed. If problems arise in the amendment process, the chair or supervisor may wish to solicit opinions from the other committee members.

Adjourned: No member of the committee signs the signature page.

If the outcome is 'Adjourned', deficiencies were noted in the oral defense and/or the thesis needs major revisions. The exam will be reconvened at a later date. The student and FGSR will be advised of the adjournment and the conditions. The FGSR needs to be notified when the date is set for the adjourned final oral examination. Normally, the Dean, Associate Dean or Delegate will attend the exam.

Fail: No member of the committee signs the signature page.

In the event of a 'Fail', the Chair must provide the reasons for the recommendation in writing to the Associate Dean, FGSR, and to the student. For failed exams, the Associate Dean, FGSR, will meet with the student and Department representatives before acting upon any departmental recommendations. A decision of the FGSR which affects the student's academic standing (i.e. required to withdraw) can be appealed by the student.

8.14 Experimental Oncology: Submitting the M.Sc. thesis to FGSR

In order to convocate, M.Sc. students must submit their thesis to the FGSR for approval before the deadline dates set out in the Academic Schedule of the Calendar.

Students must also ensure that they are registered in Thesis in their last registration prior to convocation (see "Thesis Requirements").

Please note that the Department of Oncology requires a hard copy of the student's thesis. Thesis preparation guidelines can be found at <http://www.gradstudies.ualberta.ca/gradmanual/8.13.html>

8.15 Experimental Oncology: the Ph.D. final exam

Students should review the steps in preparing and submitting their thesis by visiting <http://www.gradstudies.ualberta.ca/degreesuperv/thesis/prepare.htm> prior to writing their thesis.

The thesis must be reviewed by each member of the supervisory committee prior to forwarding it to the external examiner. The supervisor and supervisory committee must indicate that the thesis is of adequate substance and quality to warrant examination by signing the “*Preliminary Acceptance of Thesis*” signature sheet. **The external examiner and other committee members must receive the thesis at least four weeks before the examination date.**

Students are expected to prepare manuscripts on their research and submit them to scientific journals. Although not a formal program requirement, the goal of every Ph.D. student should be to obtain three first-authored publications in good quality journals. Reaching this goal will ensure that the student is competitive for postdoctoral fellowship awards and postdoctoral positions, and has more choices with regards to job opportunities and/or career paths.

8.16 Experimental Oncology: The Ph.D. Final Examination Committee

The Ph.D. final examination committee has a minimum of five faculty members, including one member from outside the Department within the University of Alberta and one external examiner from outside the University of Alberta. The committee must have at least one member (in addition to the external examiner) who is not a member of the supervisory committee and comes new to the examination. The Ph.D. examination committee is chaired by the Graduate Coordinator or designate whose role is to serve as guardian of the process. The Chair the Ph.D. examination committee may participate in discussions related to examination outcome, but only as a non-voting member. The student’s supervisor is a voting member of the examination committee. The Chair of the Department may participate in the exam as a non-voting member.

All members of the examining committee must be in attendance, which includes members participating through teleconferencing. Except for the Dean, FGSR (or Associate Dean), persons other than the examiners may attend only with the approval of the Dean, FGSR, or the Chair of the committee.

It is the supervisor's responsibility to arrange the date, time and place of the thesis examination. The names of the recommended examining committee members, as well as date, time and place of examination, should be provided to the Graduate Program Administrator at least four weeks before the date of the final oral examination. The Graduate Program Administrator will submit the “*Notice and Approval of Doctoral Final Oral Examining Committee*” form to the FGSR at least three weeks before the date of the final oral examination.

8.17 Experimental Oncology: Final Exam: Inviting the External Examiner

The external examiner must be a recognized authority in the student's field of research and be an experienced supervisor of doctoral students. The Department Chair, in consultation with the supervisor, nominates an external examiner and submits the name to the FGSR for approval. This is done on a "*Request to Invite Reader or Examiner for the Final Doctoral Oral Examination*" form at least two months in advance of the examination date. The submission must include a CV of the external examiner (including experience with graduate student education) and a short statement of the examiner's qualifications.

The external examiner must be in a position to evaluate the thesis objectively and to provide a critical analysis of the student's work. It is essential that the external examiner does not have a current or previous association with the student, supervisor, or the Department that would prevent objective analysis. A proposed examiner associated with the student as a research collaborator or co-author would therefore not be eligible. A proposed examiner with a recent association with the supervisor (e.g. as a former student or close collaborator) would also not be eligible. Any questions as to eligibility of potential external examiners should be addressed to the Graduate Coordinator or to the Associate Dean, FGSR.

Once the external examiner has been approved by the FGSR, the Associate Dean will issue a letter of invitation to the external. The external examiner shall receive the thesis at least four weeks before the final oral examination. The external examiner is asked to prepare a brief written evaluation (2-3 pages) of the thesis (scope, structure, methodology, quality, significance of impact) and submit this to the Graduate Coordinator prior to the exam or to the Committee Chair at the beginning of the exam. The external examiner will be asked to place the thesis temporarily in one of the following categories: (a) acceptable with minor or no revisions, (b) reserve judgment, and (c) unacceptable without major revisions. The written report will not be shown to the student prior to the examination. The external examiner should not contact the supervisor or student directly regarding the thesis.

The Dean, FGSR, has limited funding available for external examiners if graduate coordinators provide a compelling rationale why it would be particularly important to have an external examiner in attendance. Departments should complete and submit a Request for Funds for External Examiner Travel form to FGSR.

8.18 Experimental Oncology: Conducting the Ph.D. Final Oral Examination

There are two components to the final oral examination: a seminar of the student's work presented to the Department and the oral examination. The seminar can be given immediately prior to the examination or at another suitable time within a few weeks of the oral examination.

The examination has to be held in an appropriate venue. The Chair will provide a brief description of the examining procedure and establish the order of questioning (from most external to most internal). The student will be asked to leave the room and the student's academic history will be reviewed. The candidate will then be asked to return and either give a 20-25 minute presentation (if a seminar was not given to the Department immediately prior to the examination) or proceed directly to the examination. There will usually be two rounds of questioning (approximately 20 minutes per examiner in the first round; up to 20 minutes per

examiner in the second round) with a five minute break between the two rounds of questioning. At the close of the examination, the student is asked whether they have any final comments. The student then leaves the room while the examiners discuss the student's performance and quality of thesis. For the adjudication, no final verdict is rendered without each examiner giving an opinion. The student is then readmitted and the committee's decision is communicated by the Chair who briefly summarizes the deliberations leading to that decision. It is useful for the Chair to keep a record of the exam noting time-line, order of questioning, summarizing the opinions of each examiner and the substance of the discussion. That record will be kept in the Department office.

Outcomes of the examination:

Pass
Pass subject to revisions
Adjourned
Fail

In March 2009, the FGSR implemented a new Thesis Approval/Program Completion form, replacing signature pages in the thesis. This form is completed by the department and submitted to FGSR. Oncology, in common with many other departments, requires the following additional procedures:

Pass: Thesis is approved as is. Examining committee members sign the signature page immediately. (If one of the examiners fails the student but the student passes, that examiner does not have to sign the thesis.)

Pass subject to revisions: Members who wish to do so sign immediately. The committee chair or supervisor withholds the signature until the thesis is amended satisfactorily and all other committee members have signed. If problems arise in the amendment process, the chair or supervisor may wish to solicit opinions from the other committee members.

Adjourned: No member of the committee signs the signature page. If the outcome is 'Adjourned', deficiencies were noted in the oral defense and/or the thesis needs major revisions. The exam will be reconvened at a later date. The student and FGSR will be advised of the adjournment and the conditions. The FGSR needs to be notified when the date is set for the adjourned final oral examination. Normally, the Dean, Associate Dean or Delegate will attend the exam.

Fail: No member of the committee signs the signature page. In the event of a 'Fail', the Chair must provide the reasons for the recommendation in writing to the Associate Dean, FGSR, and to the student. For failed exams, the Associate Dean, FGSR, will meet with the student and Department representatives before acting upon any departmental recommendations. A decision of the FGSR which affects the student's academic standing (i.e. required to withdraw) can be appealed by the student.

8.19 Experimental Oncology: Submitting the Ph.D. thesis to FGSR

The approved thesis must be submitted to FGSR within six months of the date of the final oral examination. In order to convocate, Ph.D. students must submit their thesis to the FGSR for approval before the deadline dates set out in the Academic Schedule of the Calendar.

Students must also ensure that they are registered in Thesis in their last registration prior to convocation (see "Thesis Requirements").

Please note that the Department of Oncology requires a hard copy of the student's thesis. Thesis preparation guidelines can be found at <http://www.gradstudies.ualberta.ca/gradmanual/8.13.html>

9.0 THE GENERAL PROGRAM IN ONCOLOGY

Students enrolled in the General Program are expected to follow the guidelines and course requirements established for Experimental Oncology. However, alternative course requirements will be considered on a case by case basis at the request of the supervisor through dialogue involving the supervisor, the student and the Associate Chair of Graduate Studies. The request for alternative courses should be made through the Oncology Graduate Program Administrator. It is the responsibility of the General Program Graduate Coordinating Committee to identify appropriate alternative courses for ratification by the Advisory Committee to the Associate Chair of Graduate Studies.